UNITED STATES GYPSUM

solid-studless

partitions

a

USG* Metal Lath and Plaster

1016

A.I.A. File No. 20-B-1.1

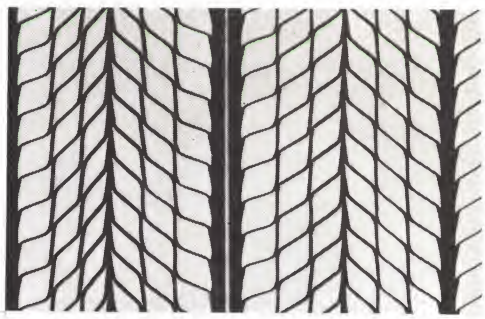
fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
1 hr.	Studless—Metal Lath & Plaster—solid—⅜″ riblath—100:2-100:2 gypsum sand plaster wt 18 width 2″	T-162-OSU (f)				Good performance—adaptable in areas of large volume constr.	
		NBS-527- F51 (s)	38		127		a-1016

description

This partition assembly is an economical monolithic plaster construction, 2″, 2¼″ or 2½″ in thickness, widely recognized for its space-saving features. USG ⅜″ Riblath, attached at the floor and ceiling by special runners, contributes vertical rigidity and reinforcement while providing an excellent lightweight plaster base. Nesting and wire tying of ribs on adjacent sheets makes the Riblath a nearly continuous reinforcing membrane which requires temporary bracing only until the partition has been plastered on one side.

The ⅜″ Riblath for this assembly is slit and expanded from rust-resisting steel in a herringbone mesh pattern with longitudinal ribs—⅜″ V-shaped ribs at 4½″ intervals and inverted intermediate 3/16″ ribs. The excellent mechanical keying properties and proper distribution of reinforcing provided by this plaster base give assemblies using it good crack resistance and fire resistance (see table, above).

USG ⅜″ riblath



function and utility

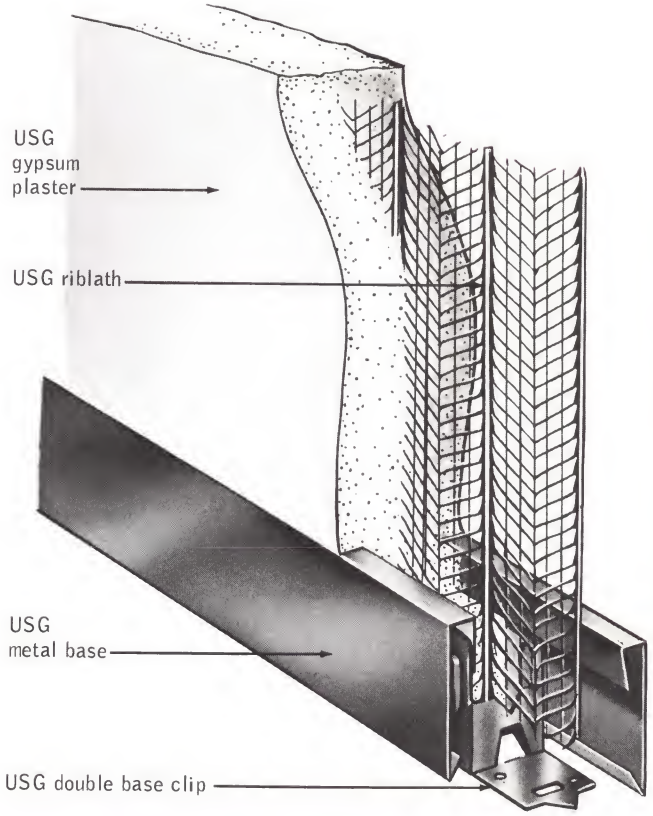
This assembly is ideal for use wherever non-load bearing plastered partitions are desired and particularly where space saving and economy are the most important factors. Its features are:

Economical—solid plaster partitions are accepted as the most economical fire-resistant plaster partition assemblies. The 2″ thickness saves space and costly floor area.

Performance—nationally accepted and used in schools, dormitories, apartments and hotels as a functional, economical, space-saving partition construction requiring little maintenance.

Fire Protection—constructed of incombustible components, this assembly has a one-hour fire resistance rating.

Strength—resists high impact loads without discernible cracking. Additional strength and rigidity may be gained by increasing the plaster thickness (see USG Gypsum Plasters Folder in this series).



limitations

1. A non-load bearing partition.

2. Limiting height is 12′.

3. Any door frames used must be fabricated and anchored to prevent twisting and impact vibrations (see Specifications, page 2).

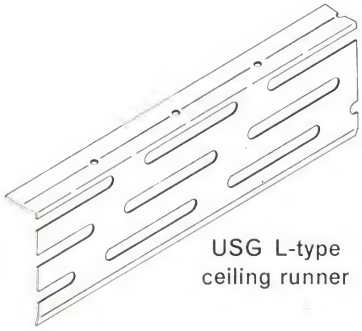
4. Solid partitions, like all other non-load bearing partition constructions, should be isolated from reinforced concrete framing columns and beams. The partition will not resist stresses transmitted to it by movement or deflection of the structural components of the building.

5. Not recommended for use with flat plate reinforced concrete floor-ceiling constructions, unless isolated from the flat plate.

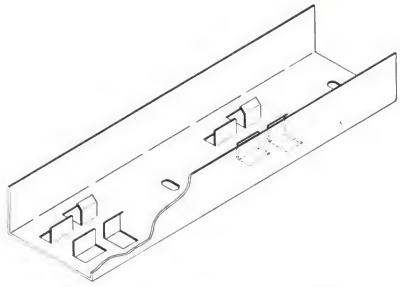
A.I.A. File No. 20-B-1.1

*Reg. U.S. Pat. Off.

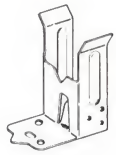
components



USG L-type
ceiling runner



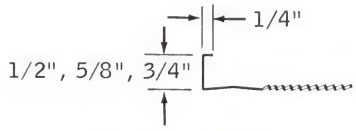
USG floor runner & screed



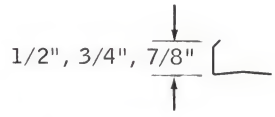
USG
double
base clip

see "plaster bases" product catalog for full description on accessories & sizes

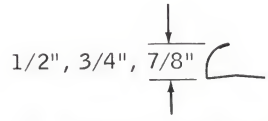
USG casing beads
(expanded or short flange)



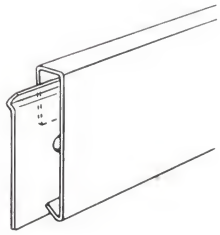
#66 square edge



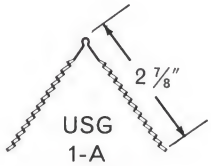
#60 semi-square edge



#4 or #138 quarter round

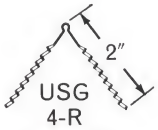


USG metal base
& splice plate

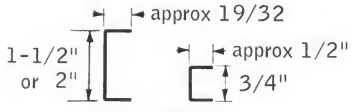


USG
1-A
expanded
corner bead

USG metal base
splice plate



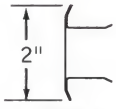
USG
4-R
expanded
flange
corner bead



USG
lathing channels

corner bead

USG
selv-edge
cornerite



USG 2″
partition terminal

specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *Steel door frames should be fabricated from 16 gauge metal, minimum, shop primed. The opening at the trim return should be accurately formed to the overall thickness of the partition.*

Base plates, designed with two anchor holes to prevent rotation, should be securely attached to trim returns to dampen door impact vibrations. Floor anchorage should be by two power-driven anchors or equivalent per plate.

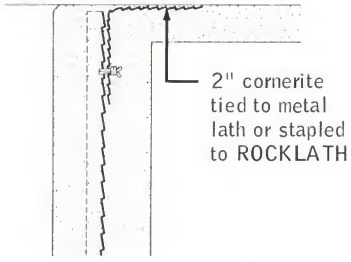
Four jamb anchors should be provided on each jamb, welded to the trim returns (see detail page 3) and wire-tied to the riblath. Separate bracing shall be furnished to keep the frame in alignment.

Grouting of the door is required on all installations. Under no conditions shall the lath and plaster terminate against the trim return of the door frame. If door frame struts are used, they shall not exceed ⅝″ in the direction of the partition thickness.

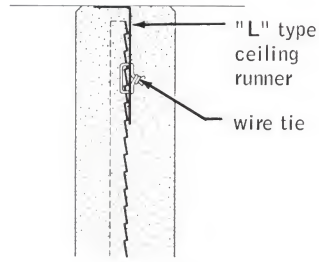
Door closers are recommended on all oversize doors and doors where the weight of the door (including attached hardware) exceeds 50 lbs. (*Specifications continued page 4.*)

details

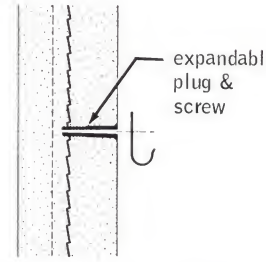
scale: 3″ = 1′-0″



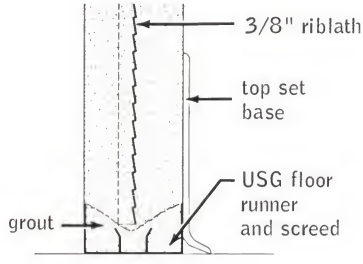
ceiling attachment



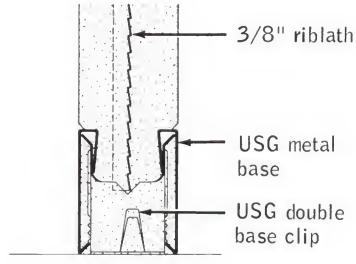
ceiling attachment



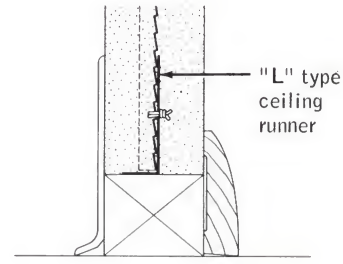
light fixture attachment



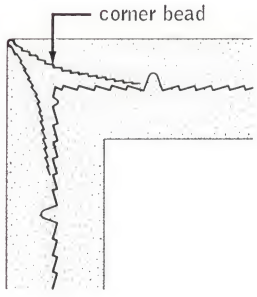
combination base runner & screed



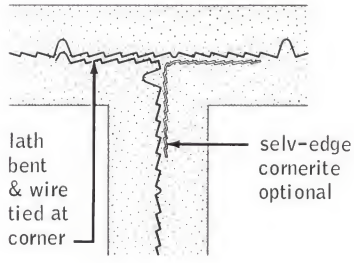
metal base



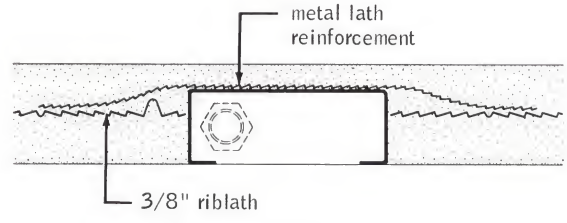
wood base



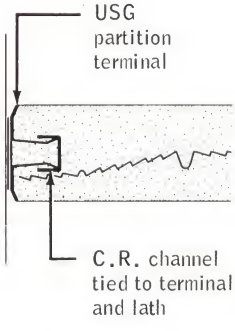
corner



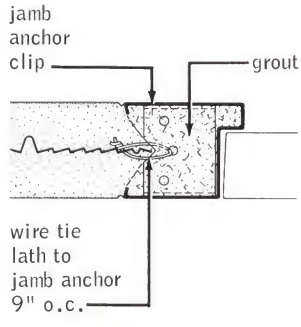
partition intersection



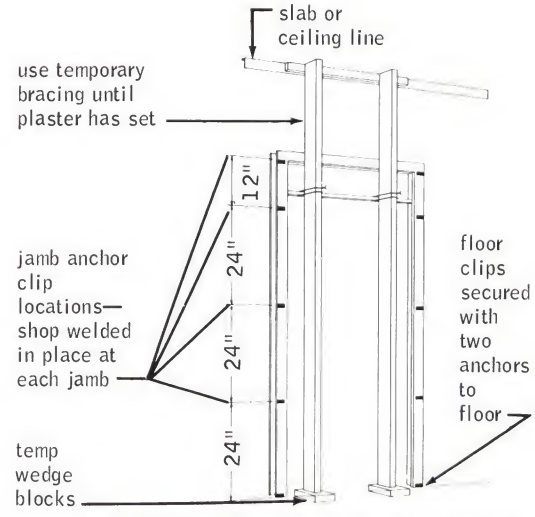
outlet box



wall intersection



metal door jamb



elevation — cross section thru frame

3. *Lath and plaster surfaces (non-load bearing) will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that lath and plaster surfaces be isolated from all structural elements, and control joints be specified where:*

   a. *a partition abuts any structural element or dissimilar wall or ceiling assembly.*

   b. *the partition construction changes within the plane of the partition.*

4. *The minimum thickness of plaster over conduit, pipe and the back of electrical outlets should be ½". The back of all electrical boxes should be reinforced with metal lath.*

5. *Where a plaster surface is flush with metal, metal bucks, metal windows, or metal base, the plaster should be grooved between the two materials.*

6. **Fixture Attachment**—*Lightweight fixtures and trim shall be installed by drilling set dry plaster to a minimum depth of ¾" and inserting a plastic plug or other expandable anchor for anchorage of attachment screws.*

7. **Ceramic Tile**—*(Where ceramic tile is required a portland cement-lime plaster shall be applied in scratch and brown coats to ⅝" grounds over metal lath as a base). (Ceramic tile shall be adhesively attached over the finished gypsum plaster in accordance with adhesive manufacturer's specifications.)*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill., 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

a. USG 3.4 lb. ⅜" Riblath 27" x ceiling height.
b. USG Metal Base—2½" (18) (20) ga.
c. USG Metal Base Splice Plate.
d. USG Double Metal Base Clip.
e. USG Floor Runner and Screed.
f. USG L-Type Ceiling Runner.
g. USG Partition Terminal.
h. USG Corner Bead (specify type from page 2).
i. USG Casing Bead (specify type from page 2).
j. USG Base Screed (specify type from page 2).
k. USG Cold Rolled Channels ¾", 1½", 2".
l. 18 ga. Tie Wire.

erection and plaster base attachment

Floor tracks shall be (USG 2½" Metal Base and Double Base Clips) or (USG Floor Runner and Screed) securely attached 24" o.c. Ceiling runner shall be USG L-Type Ceiling Runner attached 16" o.c. and located so that the USG ⅜" Riblath will be positioned in the center of the partition.

Attachment to concrete shall be with concrete stub nails or power driven anchors; to ceiling grillage with a double strand of 18 gauge tie wire; to plaster or gypsum lath with toggle bolts or staples.

The riblath shall be erected vertically, attached to the floor runner or set in a groove of the grouted metal base and securely wire-tied 8" o.c. to the ceiling runner. Wire-tie the nested edges of sheets 12" o.c. and securely tie the riblath to jamb inserts or door frames. At all interior angles, metal lath shall be formed into the corners and carried out onto the abutting surface, and adequately secured.

Partition terminals and cased openings shall be finished with USG Partition Terminal wire-tied securely in place.

Temporary bracing shall not be less than ¾" C. R. Channels placed horizontally near mid-height of the partition and tied to the riblath 24" o.c. and with 1½" angle braces placed vertically not over 6' o.c. Wedge the vertical braces at top and bottom and tie the horizontal ¾" channel to hold lath in place. Bracing shall remain in place until the brown coat of plaster on the side opposite the bracing has set.

lathing accessories

a. Metal Base shall be 2½" high, (18) (20) gauge, painted. Metal base shall be notched to a neat miter in forming all angles, in continuous runs, ends shall be evenly butted and internally spliced with a splice plate. Base shall be securely held in place by clipping to base clips.

b. USG Partition Terminal shall be provided as detailed and where indicated. Attach with 18-gauge tie wire 6" o.c.

c. Metal Corner Bead (000000) shall be provided on all external plaster corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. Fasten securely with wire-ties, etc., spaced not over 8" o.c. stagger in two wings.

d. Casing Bead No. (000000) shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed.

e. Base Screed No. (000000) shall be installed 6" above the finish floor, unless otherwise indicated. Set screeds level, true to line, in lengths as long as practical, with joints aligned with a suitable splice. Wire-tie in place.

UNITED STATES GYPSUM

partitions

a

solid-channel stud

USG* Metal Lath and Plaster

1026

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
2 hrs.	Chan Stud—Solid Metal Lath & Plaster—¾″ cr chan 16″ o.c.—3.4# dm met lath—STRUCTO-LITE (Type R) plaster wt 12 width 2½″	UL Des 19-2 hr (f)	N/A		137	2-hr. rating also obtainable with 2″ of wood fiber plaster	a-1026
1 hr.	Chan Stud—Solid Metal Lath & Plaster—¾″ cr chan 16″ o.c.—2.5# dm met lath—100:2-100:2 gypsum sand plaster wt 18 width 2″	MLA T-129 OSU (f) NBS-523 F45 (s)	37		133	Standard solid partition design	a-1026
wall furring application							
—	¾″ C.R. Channels 16″ o.c., cross braced, 3.4# diamond mesh metal lath, ⅜″ sanded basecoat plaster, lime putty finish coat	—	—	—	203	No vapor barrier; isolation adequate	a-1026

description

This partition assembly is an economical monolithic plaster construction, 2″ or more in thickness, widely recognized for its space-saving features. USG Cold Rolled Channels, placed vertically, act as permanent studs and are attached at the floor and ceiling by special runners. USG Metal Lath, slit and expanded from rust-resisting steel, is wire-tied to the studs providing an ideal, lightweight base for economical application of gypsum plasters.

Metal lath for this assembly is available in two types (see Specifications, page 6). The excellent mechanical keying properties and equal distribution of reinforcing provided by this plaster base give these assemblies high fire resistance and acceptable sound transmission loss ratings (see table, above). For greater fire resistance or increased ceiling height, solid partitions thicker than 2″ may be used (see table below).

function and utility

This assembly is ideal for use wherever non-load bearing plastered partitions are desired and particularly where space saving and economy are the most important factors. Its features are:

Economical—Solid plaster partitions are accepted as the most economical fire-resistant plaster partitions. The 2″ thickness saves space and costly floor area.

Performance—nationally accepted and used in schools, dormitories, apartments and hotels as a functional, economical, space-saving partition construction requiring little maintenance.

Lightweight—In structural design the dead load ranges from 12 to 23 lbs. per sq. ft. depending on type of plaster aggregate and plaster thickness used.

Fire Protection—Constructed of incombustible components, this assembly has established fire resistance ratings of up to two hours (see table above).

Sound Isolation—provides a 39 decibel average sound transmission loss, considered satisfactory for normal requirements within offices, apartments and hotel units.

Strength—Highly resistant to impact damage. Additional strength and rigidity may be gained by increasing the plaster thickness (see USG Gypsum Plasters Folder in this series).

limitations

1. A non-load bearing partition.

2. Limiting height for 2″ thickness is 12′. (See table below for limitations of other thicknesses).

3. Door frames must be anchored to prevent twisting and impact vibrations (see Specifications, page 6).

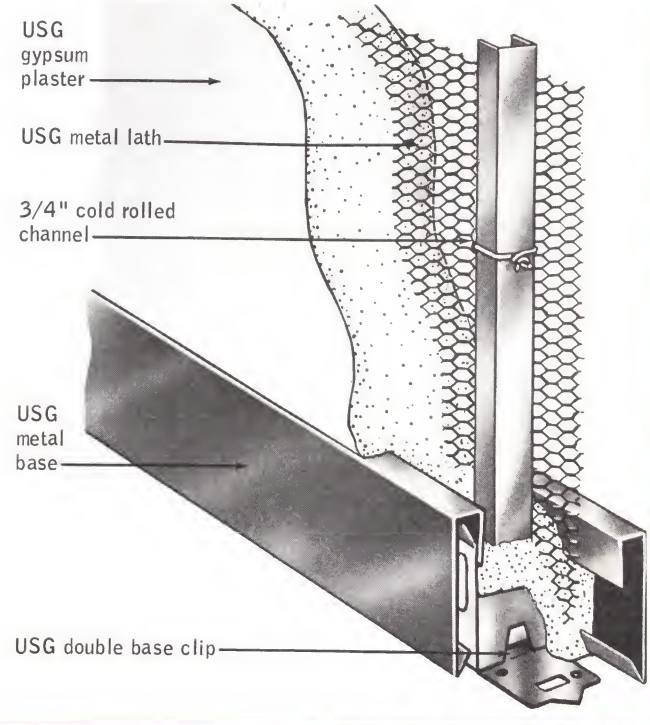
4. Solid partitions, like all other non-load bearing partition constructions, should be isolated from reinforced concrete framing columns and beams. The partition will not resist stresses transmitted to it by movement or deflection of the structural components of the building.

5. Not recommended for use with flat plate reinforced concrete floor-ceiling constructions, unless isolated from the flat plate.

partition thickness—limiting heights

partition construction	thickness	limiting ceiling ht.
¾″ Cold Rolled Channels Diamond Mesh Lath & Plaster	2″	12′-0″
¾″ Cold Rolled Channels Diamond Mesh Lath & Plaster	2¼″	14′-0″
¾″ Cold Rolled Channels Diamond Mesh Lath & Plaster	2½″	16′-0″
1½″ Cold Rolled Channels Diamond Mesh Lath & Plaster	2¾″	18′-0″
1½″ Cold Rolled Channels Diamond Mesh Lath & Plaster	3″	20′-0″
1½″ Cold Rolled Channels Diamond Mesh Lath & Plaster	3½″	22′-0″

NOTE: No limitation on length of this partition for heights under 12′-0″. Length between columns, or walls, shall not be greater than 2 times the partition height when the latter exceeds 16′-0″; nor greater than the height when it is 24′-0″ or more. Heights over 20′-0″ shall have horizontal girts every 6′-0″.



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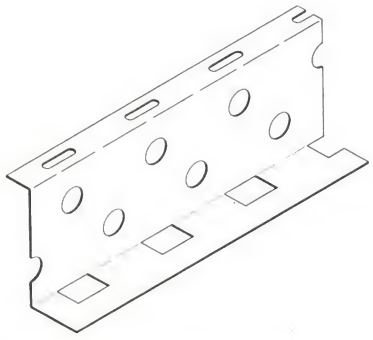
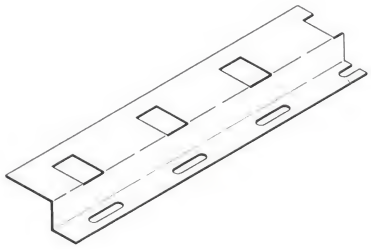
*Reg. U.S. Pat. Off.

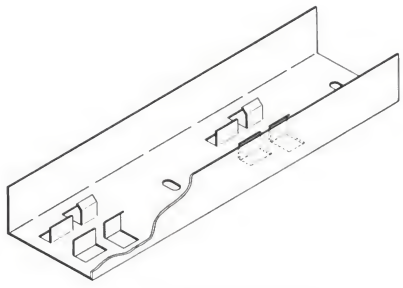
components



USG Z-type ceiling runner

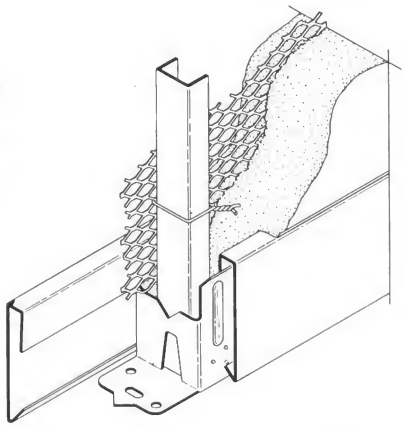


USG Z-type floor runner

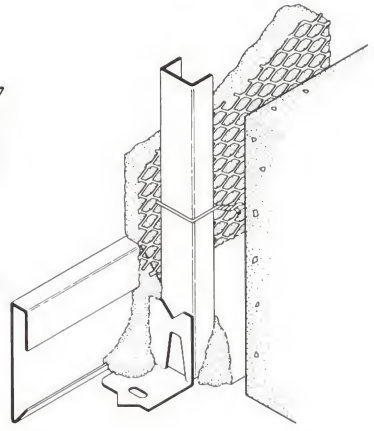


USG floor runner & screed

USG double base clip



USG single base clip



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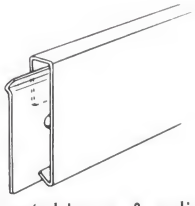
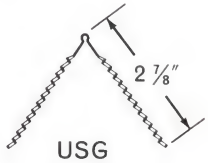
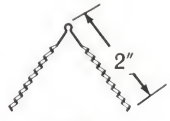


USG metal base & splice plate

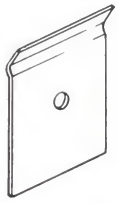
USG selv-edge cornerite



USG 1-A expanded corner bead

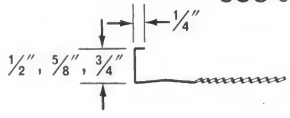


USG 4-R expanded corner bead

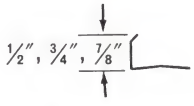


USG metal base splice plate

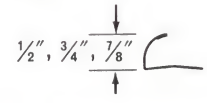
USG casing beads (expanded or short flange)



#66 square edge

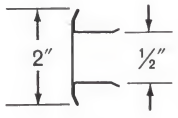


#60 semi-square edge

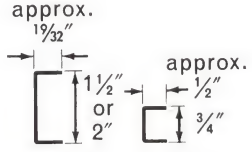


#4 or #138 quarter round

USG adjustable wall furring bracket



USG 2" partition terminal

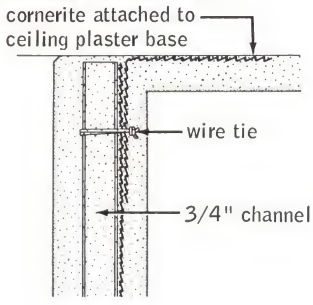


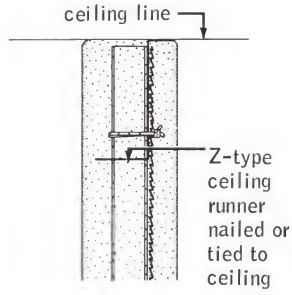
USG cold rolled channels

details

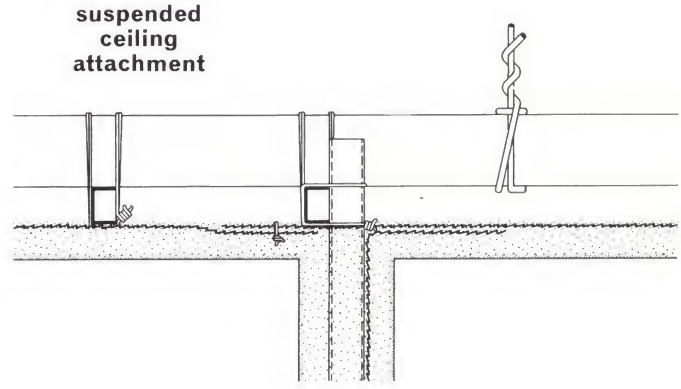
scale: 3″ = 1′-0″

ceiling attachment

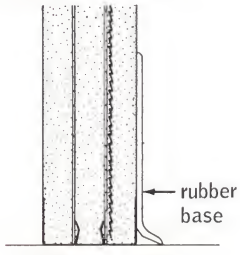




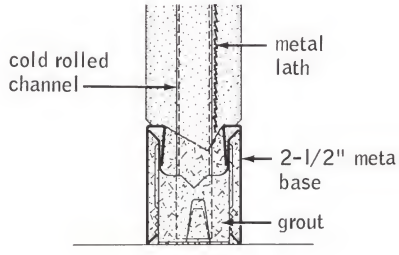
suspended ceiling attachment



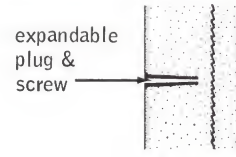
floor attachment



flush top set

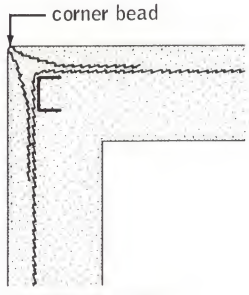


metal

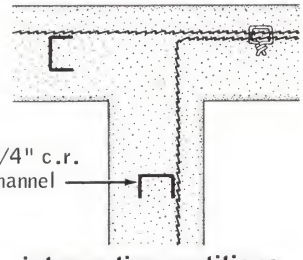


light fixture attachment

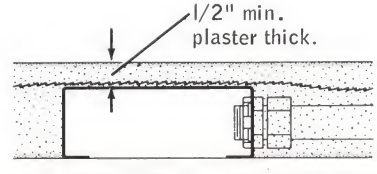
intersecting walls



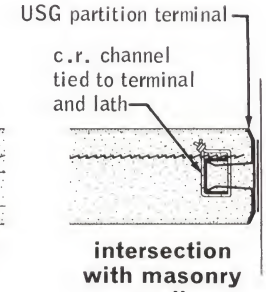
partition corner



intersecting partitions

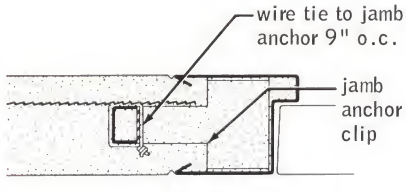


electrical fixture attachment

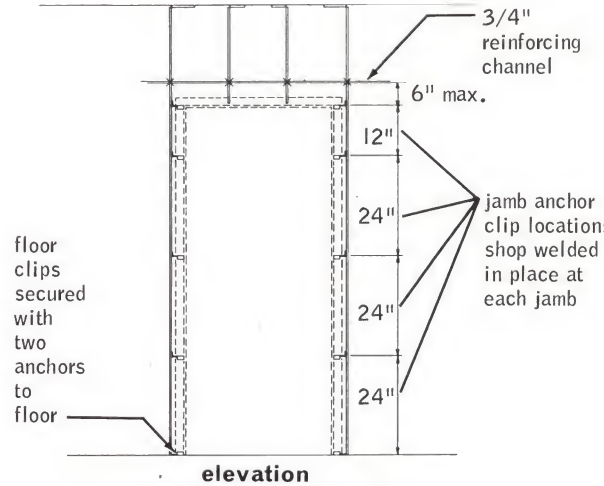


intersection with masonry wall

metal door frame details



jamb



elevation
cross section thru frame

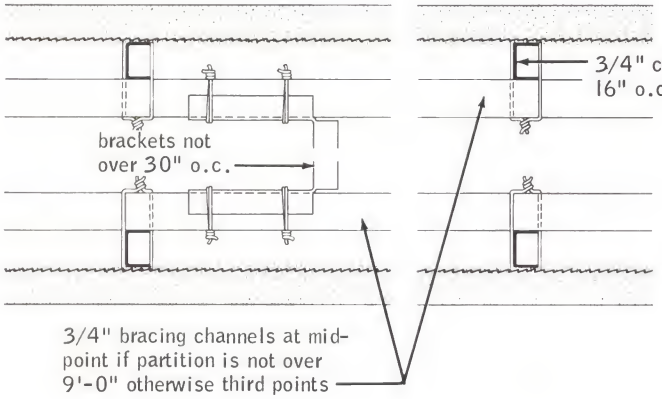
*Reg. U.S. Pat. Off.

core walls

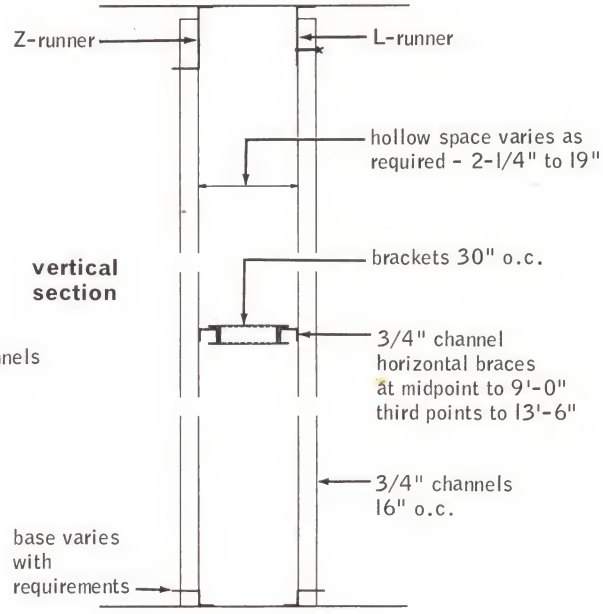
Core walls, as vertical shafts encasing the usual plumbing supply and waste lines, vent ducts and electrical conduits, require more free space than can be provided within the usual partition assembly. The channel stud core wall provides almost unlimited space for mechanical installations within the partition.

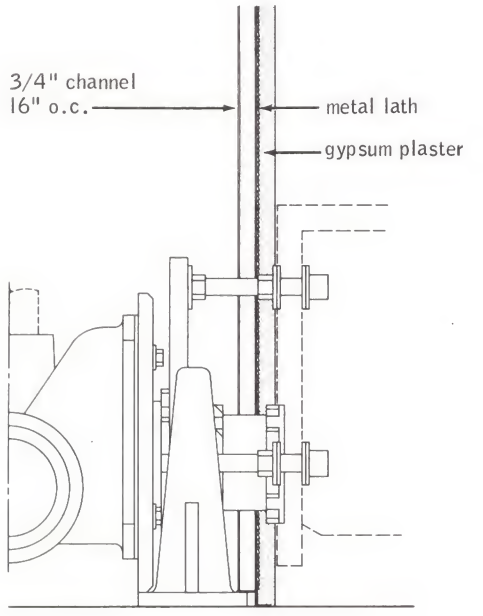
Core walls are easily constructed using channel studs and metal lath, provided proper bracing is used to compensate for the stress skin action of the one side. The non-lathed side of the studs shall be stiffened with ¾″ channel horizontal braces spaced vertically at midpoint to 9′-0″, third points to 13′-6″; and ¾″ channel bracket mid-girts spaced not over 30″ o.c. horizontally (see detail).

horizontal section
scale: 3″=1′0″

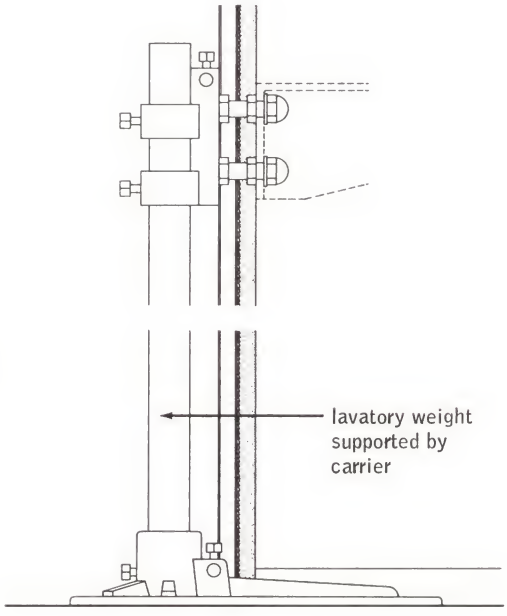


vertical section





closet carrier



lavatory carrier

exterior wall furring

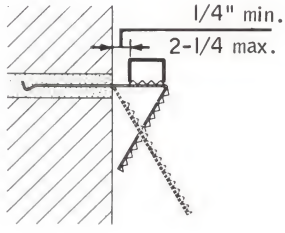
It is recommended that all exterior walls be furred. Asphaltic or bituminous bonding agents are not recommended as a plaster base. Channel studs, metal lath and plaster provide an exterior wall furring system that offers the same space-saving features, economical construction and readily decorated interior wall surface found in the related solid plaster partition.

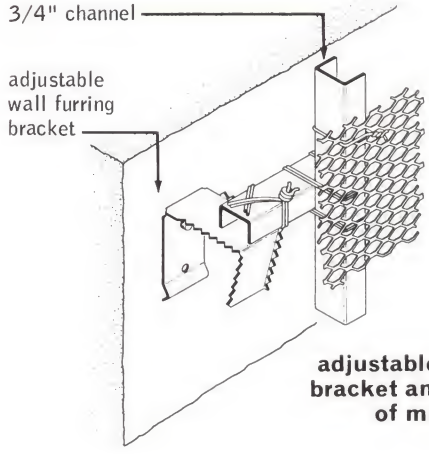
This system consists of three horizontal ¾″ channels, located not more than 6″ from the floor and ceiling, and one at the midpoint between floor and ceiling attached to the wall with USG Adjustable Wall Furring Brackets not more than 36″ o.c. Vertical channels are wire tied to these horizontal members, with spacing determined by the maximum allowable spacing of supports for the type of metal lath used (see below). Metal lath is wire tied on the vertical channels and plastered to ¾″ grounds. If height exceeds 10′-0″ using ¾″ channels, additional horizontal channels are required, spaced not more than 4′-6″ o.c.

type of lath	weight per sq. yd.	maximum allowable spacing
Diamond Mesh	2.5 lb.	12″
Diamond Mesh	3.4 lb.	16″
⅛″ Z-Rib	2.75 lb.	16″
⅛″ Z-Rib	3.4 lb.	19″

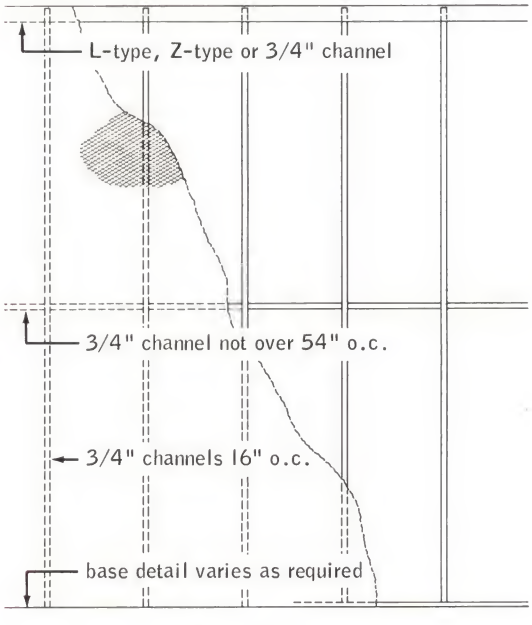
adjustable wall furring brackets

1. Wall furring brackets shall be attached not more than 36″ o.c. horizontally and 4′-6″ o.c. vertically.
2. After attachement, bend bracket to horizontal position.
3. Wire-tie plumbed channel to bracket ¼″ min. (2¼″ max.) from wall.
4. Bend excess of bracket down.





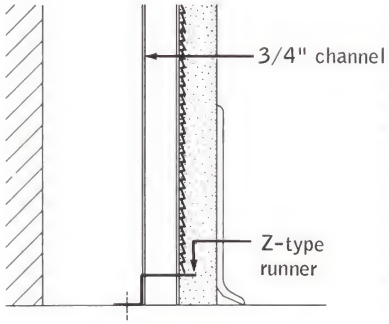
adjustable wall furring bracket and attachment of metal lath



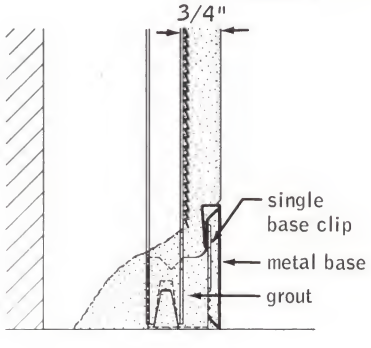
elevation

floor attachment

scale: 3″ = 1′-0″



top set



metal

specifications

notes to architect

1. *In cold weather, all glazing should be completed and the building must be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *Steel door frames should be fabricated from 16 gauge metal, minimum, shop primed. The opening at the trim return should be accurately formed to the overall thickness of the partition.*

Base plates, designed with two anchor holes to prevent rotation, should be securely attached to trim returns to dampen door impact vibrations. Floor anchorage should be by two power-driven anchors or equivalent per plate.

Four jamb anchors should be provided on each jamb, welded to the trim returns. (See detail page 3.)

Steel door frames should be grouted solid with mortar when the scratch coat of plaster is applied. Under no conditions shall the lath and plaster terminate against the trim return of the door frame.

Door closers are recommended on all oversize doors and doors where the weight of the door (including attached hardware) exceeds 50 lbs.

3. *Lath and plaster surfaces (non-load bearing) will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that lath and plaster surfaces be isolated from all structural elements and control joints be specified where:*

a. *a partition abuts any structural element or dissimilar wall or ceiling assembly.*

b. *the partition construction changes within the plane of the partition.*

4. *The minimum thickness of plaster over conduit, pipe and the back of electrical outlets should be ½″. The back of all electrical boxes should be reinforced with metal lath.*

5. *Where a plaster surface is flush with metal, metal bucks, metal windows, or metal base, the plaster should be grooved between the two materials.*

6. *Fixture attachment—Lightweight fixtures and trim shall be installed using plastic plugs or other expandable anchors for screw attachment. Heavy fixture attachment is not recommended.*

7. *Ceramic Tile—Where ceramic tile is required, a portland cement-lime plaster shall be applied in scratch and brown coats to ⅝″ grounds over metal lath as a base. Metal lath shall be tied to the tile side of the channel studs.*

(Ceramic tile may be adhesively attached over the finished gypsum plaster in accordance with the adhesive manufacturer's specifications.)

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill. 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company.

a. USG Floor Runner and Screed.

b. USG Metal Base—2½″ (18) (20) ga.

c. USG Metal Base Splice Plate.

d. USG Double Metal Base Clip.

e. USG Single Metal Base Clip.

f. USG Z-Type Ceiling Runner.

g. USG Z-Type Floor Runner.

h. USG Partition Terminal.

i. USG Corner Bead (specify type from page 2).

j. USG Casing Bead (specify type from page 2).

k. USG Cold Rolled Channels ¾″, 1½″, 2″.

l. USG Adjustable Wall Furring Bracket.

m. 18 Ga. tie wire.

n. Metal Lath shall be (2.5 lb.) (3.4 lb.) Diamond Mesh, (2.75 lb.) (3.4 lb.) Z-Riblath 27″ x 96″.

floor and ceiling track erection

Floor and ceiling track shall be of the type and size shown on the plans or as herein specified and shall be aligned accurately according to the partition layout.
Floor tracks shall be (USG 2½″ Metal Base and Double Base Clips) (USG 2½″ Metal Base and Single Base Clips) securely attached 16″ o.c. or (USG Floor Runner and Screed) (USG Z-Type Floor Runner) securely attached 24″ o.c.
Attachment to concrete shall be with concrete stub nails or power driven anchors; to ceiling grillage with a double strand of 18 gauge tie wire; to plaster or gypsum lath with toggle bolts or staples.

partition system erection

Studs shall be ¾″ C.R. Channel, and the partition thickness two inches unless otherwise noted. Studs shall be spaced not to exceed 16″ o.c. and shall be of sufficient length to properly engage the USG Z-Type Ceiling Runner and the USG Floor Runner and Screed, or the USG Double Base Clips. A stud shall be wire tied at each jamb of steel or wood door frames and at openings cased with USG's Partition Terminal.
A horizontal reinforcement shall be used over all openings and shall consist of a ⅜″ round rod or a ⅛″ by 1¼″ flat bar. Saddle tied to each vertical stud, the bar or rod should extend out to the first stud beyond the frame.

channel stud core wall erection

The core wall shall consist of two lath and plaster diaphragms supported by a channel iron grillage.

Runner tracks shall be provided at each face.

Floor runners shall consist of Single Base Clips at 16″ o.c. with 2½″ USG Metal Base Face Plate or the USG Z-Type Floor Runner.

The ceiling tracks shall be USG Z-Type Ceiling Runner.

The double row of ¾″ c.r. channel studs shall be spaced not to exceed 16″ o.c. and shall be of sufficient length to properly engage the floor and ceiling runners.

Aligning ¾″ channels shall be saddle-tied to the inside face at each stud. A pair of aligning channels on partitions 9′-0″ or less at mid-point or at third points not to exceed 4′-0″.

The channel girts shall be tied together by forming brackets of ¾″ channels, spaced 30″ o.c. along the horizontal aligning channels. Legs of the brackets and channels to be nested and securely wire-tied.

channel stud furring system erection

¾″ channel studs shall be erected vertically 16″ o.c. and aligned and secured by:

1. Engaging the Single Base Clip or the Z-Type Floor Runner.
2. Engaging the Z-Type ceiling runner.
3. Saddle tying to horizontal ¾″ channel girts spaced not to exceed 4′-6″ o.c.

The horizontal girts shall be secured to the masonry back-up at 36″ o.c. by saddle tying the channel to serrated leg of USG Adjustable Wall Furring Brackets.

door frame erection

Studs shall be inserted into the steel door frame, nested in the notches of the jamb anchor clips and securely wire tied. A ⅜″ round rod or a ⅛″ x 1¼″ flat bar horizontal reinforcement shall be used over the head of the door, extending out to engage the first stud beyond the frame. The reinforcing shall be securely wire tied at each channel intersection.

plaster base attachment

Metal Lath shall be applied with the long dimension of the sheet across the supports. The ends of all lath shall be lapped not less than 1 inch. If end laps are made between supports, they shall be adequately laced or tied with 18 gauge tie wire. The sides of diamond mesh lath shall be lapped not less than ½ inch. The sides of riblath shall be lapped by nesting outside ribs, and shall be wire tied to every support, and between supports not to exceed 9 inch intervals. All metal lath shall be placed so that the lower sheets overlap the upper sheets. Wherever possible, ends of lath in adjacent courses shall be staggered. Metal lath shall be secured to all supports, with 18 gauge tie wire at intervals not exceeding 6 inches. At all interior angles, metal lath shall be formed into the corners and carried out onto the abutting surface and adequately secured.

lathing accessories

a. Metal Base—2½ inch (18) (20) gauge, painted, shall be notched to a neat miter in forming all angles. In continuous runs ends shall be evenly butted and internally spliced with a splice plate. Metal base shall be securely held in place by engaging the base clips.

b. Metal Corner Bead No. (00000) shall be provided on all exterior plaster corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. Fasten securely with wire-ties, spaced not over 8″ o.c.; stagger in two wings.

c. Casing Bead No. (00000) shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed. Attach with 18 gauge tie wire 6″ o.c.

d. USG Partition Terminal shall be provided as detailed and where indicated. Attach with 18 gauge tie wire 6″ o.c.

*TRADEMARKS: The following trademarks are owned and/or registered in the U.S. Patent Office by United States Gypsum Company, and are used throughout this catalog to designate particular products manufactured by that company: USG (metal products).

NOTE: Since methods and conditions of application and use are beyond our control, the United States Gypsum Company will not be responsible for failure of its products when not used according to our directions and specifications.

UNITED STATES GYPSUM

solid

partitions **a**

ROCKLATH* and Plaster

PLASTER BASE

1036

A.I.A. File No. 20-B-2.1

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
1 hr.	Studless—Solid Gypsum Lath & Plaster—½" long length ROCKLATH—¾" 100:1-100:2 gypsum sand plaster wt 16 width 2"	T-118-OSU (f) NBS-510 F29 (s)	34		120	Economical on volume projects where special fitting or cutting is minimum	a-1036
wall furring applications							
—	¾" C.R. Channels 16" o.c., cross braced, ⅜" Insulating ROCKLATH and BRACE-TITE* Clips, ½" sanded base-coat plaster, lime putty finish	—	—	—	185	Isolation adequate; good vapor barrier	a-1036
—	⅜" Long Length Insulating ROCKLATH, supported by ¾" horizontal channels 36" o.c., ¾" sanded basecoat plaster, lime putty finish	—	—	—	203	Limited to 12' ceiling height. Control joints should be used 20' o.c.	a-1036

description

This partition assembly is an economical monolithic plaster construction, 2" or more in thickness, which has been readily accepted for its space-saving features. ½", V-edge, Long Length ROCKLATH plaster base is held vertically by floor and ceiling runners and plastered on both sides. Temporary bracing is required until the assembly has been partially plastered.

function and utility

This assembly is ideal for use wherever non-load bearing plastered partitions are desired and particularly where space-saving and economy are the most important factors. Its features are:

Economical—solid plaster partitions are accepted as the most economical fire-resistant plaster partition assemblies. The 2" thickness saves space and costly floor area. Material costs are less because no studs are required.

Lightweight—In structural design the dead load for 2" solid plaster partitions ranges from 11 to 16 lbs. per sq. ft., depending on the type of plaster aggregate used.

Performance—nationally accepted and used in schools, dormitories, apartments, and hotels as a functional, economical, space-saving partition construction requiring little maintenance.

Fire Protection—Constructed of incombustible components, this assembly has an established fire resistance rating of one hour (see table above).

Strength—A 240 ft.-lb. impact load concentrated at the center of a 2" x 8'-0" x 16'-0" panel failed to cause serious cracking. Additional strength and rigidity may be gained by increasing the plaster thickness (see USG Gypsum Plasters Folder in this series).

limitations

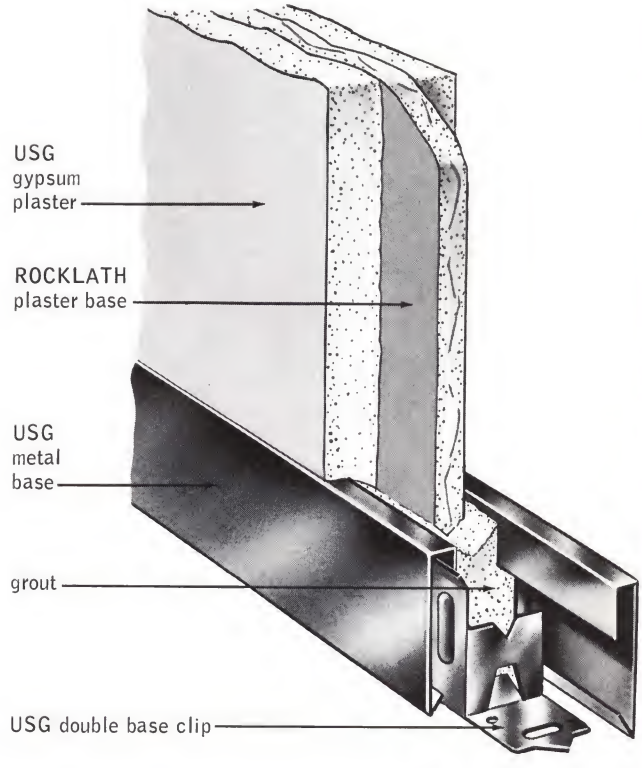
1. A non-load bearing partition.

2. Limiting height is 10'.

3. Door frames must be fabricated and anchored to prevent twisting and impact vibration (see Specifications, page 6).

4. Solid lath and plaster partitions, like all other non-load bearing partition constructions, should be isolated from reinforced concrete framing columns and beams. The partition will not resist stresses transmitted to it by movement or deflection of the structural components of the building.

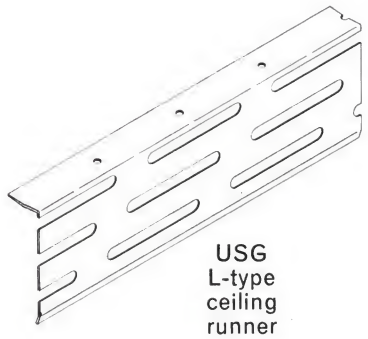
5. Not recommended for use with flat plate reinforced concrete floor-ceiling constructions, unless isolated from the flat plate.



A.I.A. File No. 20-B-2.1

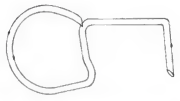
*Reg. U.S. Pat. Off.

components

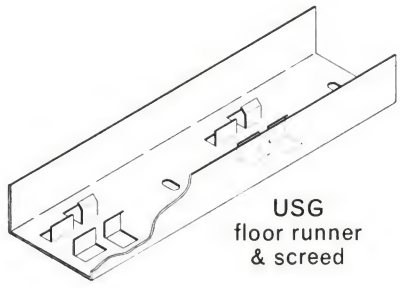


USG
L-type
ceiling
runner

USG ceiling runner clip

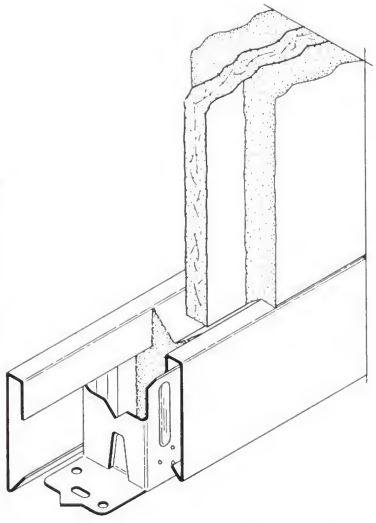


USG bracing clip

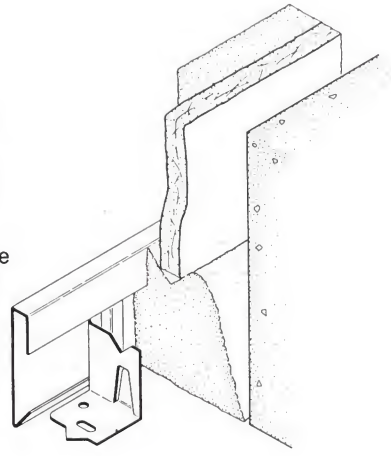


USG
floor runner
& screed

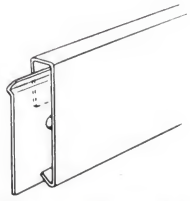
USG double
base clip



USG single
base clip

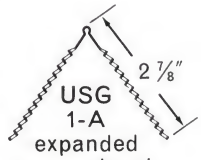


see "plaster bases" product catalog for full description on accessories & sizes



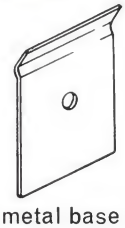
USG metal base & splice plate

USG
selv-edge
cornerite



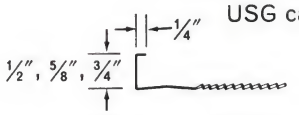
USG
1-A
expanded
corner bead

USG
4-R
expanded
corner bead

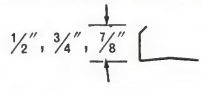


USG metal base splice plate

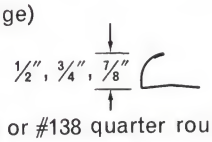
USG casing beads (expanded or short flange)



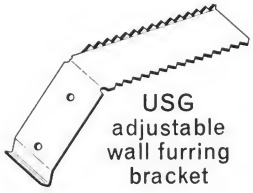
#66 square edge



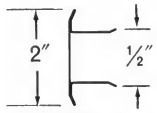
#60 semi-square edge



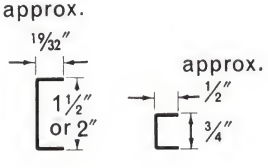
#4 or #138 quarter round



USG
adjustable
wall furring
bracket

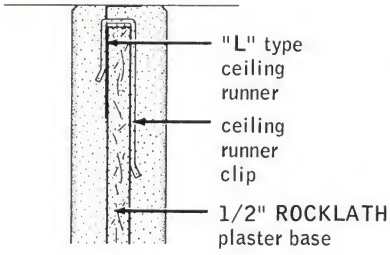


USG 2"
partition terminal

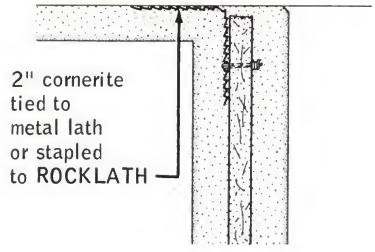


details

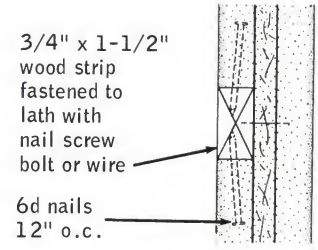
scale: 3″ = 1′-0″



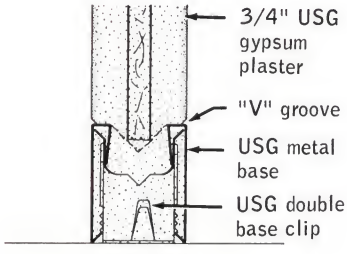
ceiling attachment



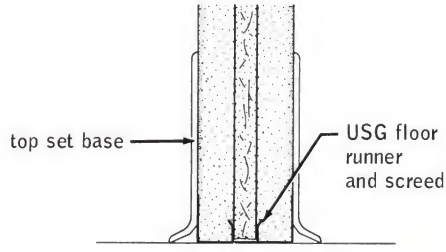
ceiling attachment



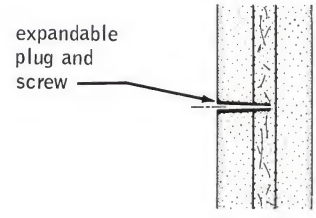
cabinet fixture attachment



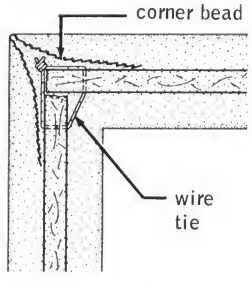
metal base



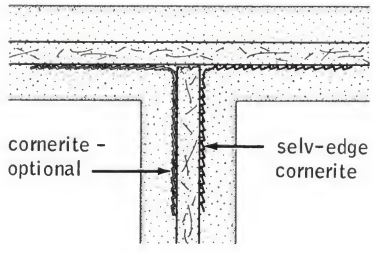
top set base



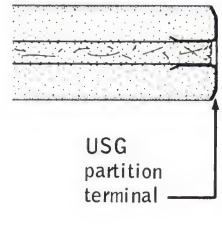
light fixture attachment



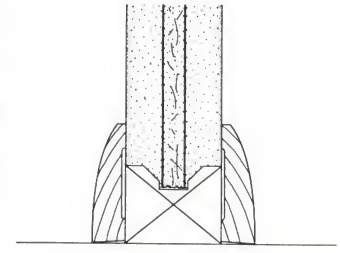
corner



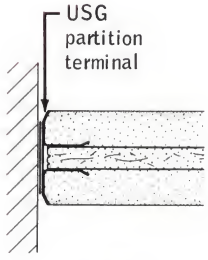
partition intersection



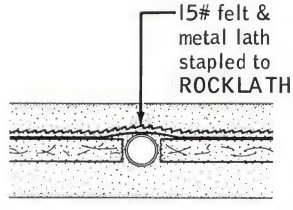
partition terminal



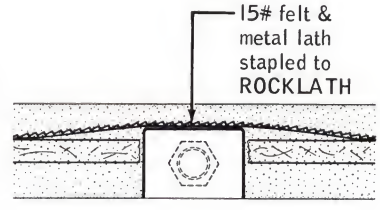
wood base & wood runner



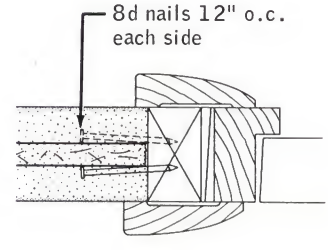
wall intersection



electrical conduit



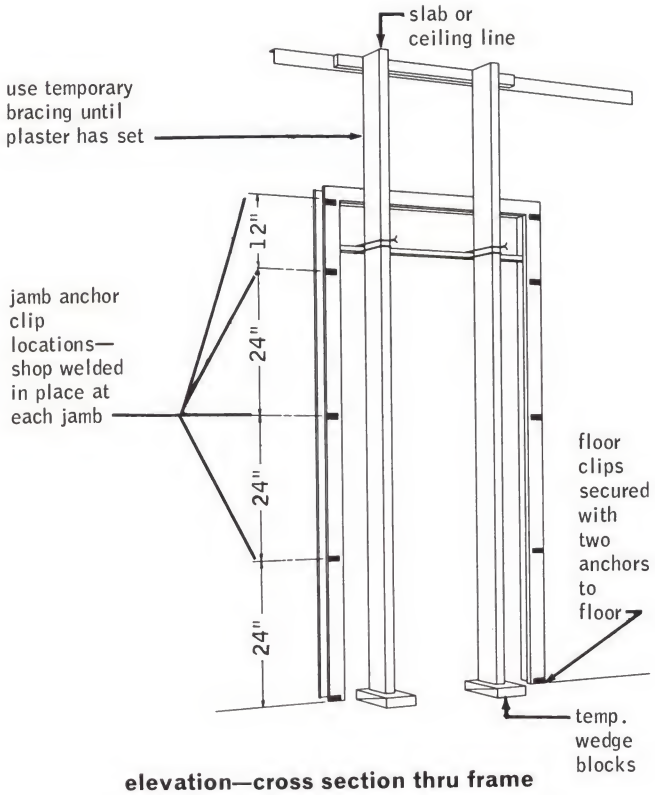
outlet box



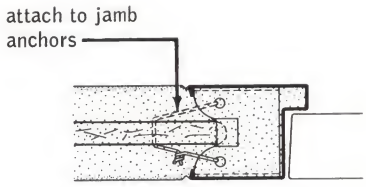
integral wood door frame

details

scale: 3″ = 1′-0″



elevation—cross section thru frame



metal door jamb

exterior wall furring

It is recommended that all exterior walls be furred. Asphaltic or bituminous bonding agents are not recommended as a plaster base. ⅜″ square edge Long Length Insulating ROCKLATH and plaster provide structural and economic advantages for special furring conditions.

In this system USG Adjustable Wall Furring Brackets, spaced not more than 36″ o.c. and properly secured to the exterior wall, provide the support for ¾″ channels placed 36″ o.c. horizontally. Long Length Insulating ROCKLATH is attached to the channels by wire ties, and plaster is applied to ¾″ grounds.

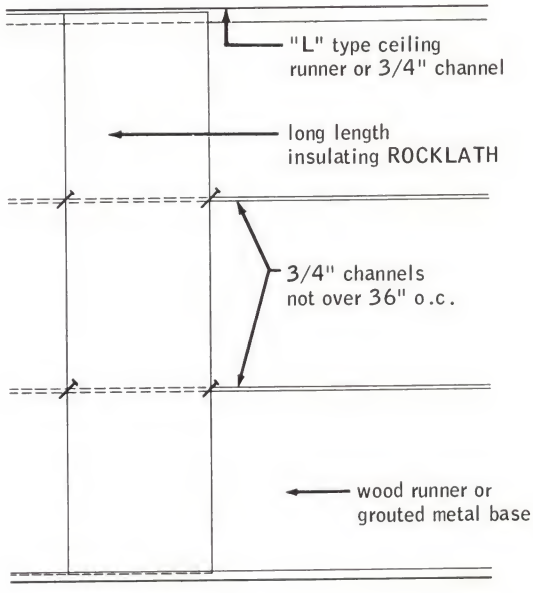
function and utility

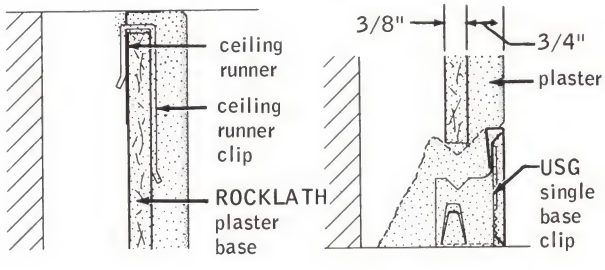
The same space-saving features, fire protection and other economies found in the solid ROCKLATH and plaster partition apply to this exterior wall furring system. In addition, when Insulating ROCKLATH Plaster Base is used its features include:

1. Condensation control.
2. Protection of interior wall surface from moisture seepage.
3. Insulation and vapor barrier.
4. A degree of isolation from structural movement.

limitations

1. Long Length Insulating ROCKLATH wall furring is not economical for cut-up wall areas containing a large percentage of openings.
2. Limiting height of Long Length Insulating ROCKLATH Furring System is 12′-0″.



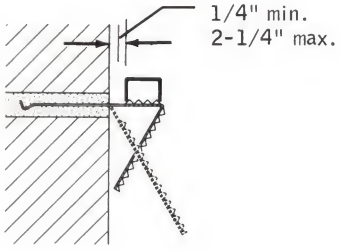


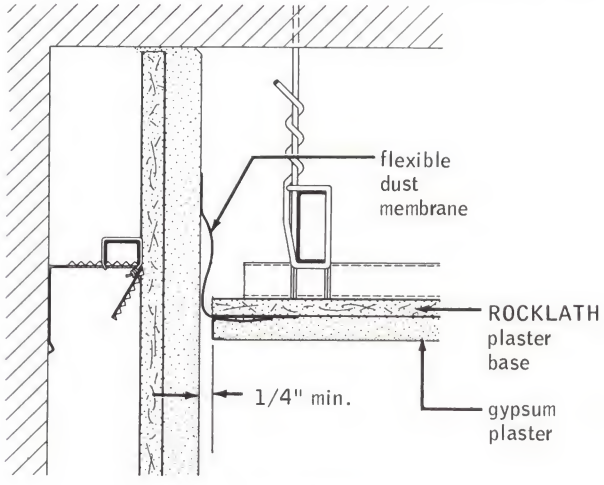
ceiling attachment **floor attachment**

details

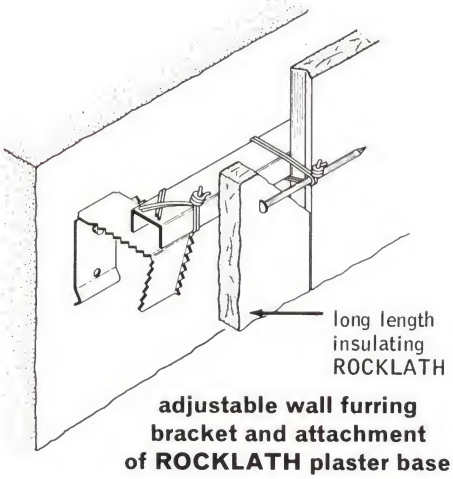
adjustable wall furring brackets

1. Wall furring brackets should be attached not more than 36″ o.c. horizontally and vertically.
2. After attachment, bend bracket to horizontal position.
3. Wire-tie plumbed channel to bracket ¼″ min. (2¼″ max.) from wall.
4. Bend excess of bracket down.

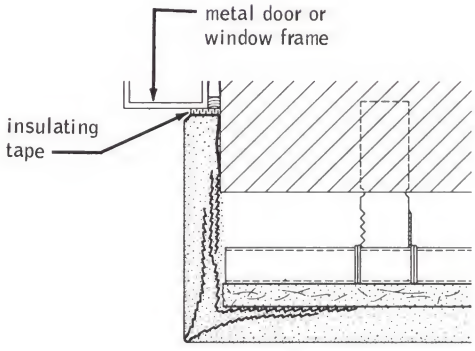




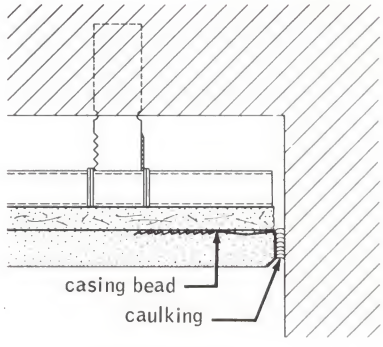
ceiling isolation at furred wall



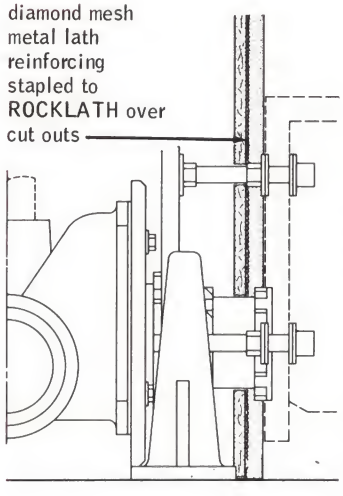
adjustable wall furring bracket and attachment of ROCKLATH plaster base



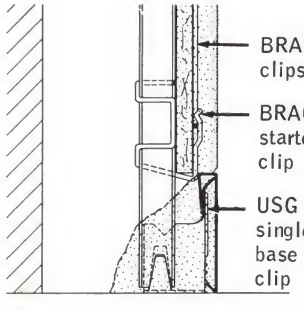
jamb section at metal door or window



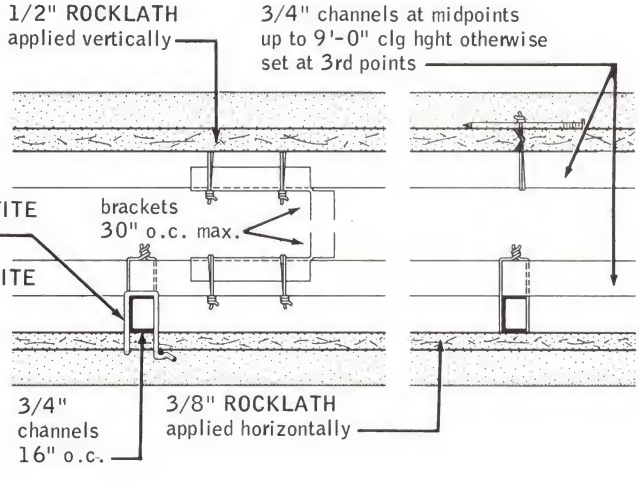
column or wall isolation



detail at typical closet carrier



metal base



core wall horizontal section

*Reg. U.S. Pat. Off.

specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *Steel door frames should be fabricated from 16 gauge metal, minimum, shop primed. The opening at the trim return should be accurately formed to the overall thickness of the partition.*

Base plates, designed with two anchor holes to prevent rotation, should be securely attached to trim returns to dampen door impact vibrations. Floor anchorage should be by two power-driven anchors or equivalent per plate.

Four jamb anchors should be provided on each jamb, welded to the trim returns (see detail page 4) and wire-tied to the ROCKLATH. Separate bracing shall be furnished to keep the frame in alignment.

Grouting of the door frame is required on all installations. The grout shall be raked out to allow the lath and plaster to be inserted into the frame. Under no conditions shall the lath and plaster terminate against the trim return of the door frame.

If door frame struts are used, they shall not exceed ⅝" in the direction of the partition thickness.

Door closers are recommended on all oversize doors and doors where the weight of the door (including attached hardware) exceeds 50 lbs.

3. *Lath and plaster surfaces (non-load bearing) will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that lath and plaster surfaces be isolated from all structural elements, and control joints be specified where:*

a. *a partition abuts any structural element or dissimilar wall or ceiling assembly.*

b. *the partition construction changes within the plane of the partition.*

4. *Holes cut in a thin lath and plaster membrane, such as door frames, borrowed lights, etc., cause a concentration of stresses in the plaster. The use of cornerite, striplath and self-furring diamond mesh lath is recommended at the weakened area to distribute concentrated stresses.*

5. *The minimum thickness of plaster over the back of electrical outlets should be ½": over electrical conduits or cables a full ⅜" thickness of base coat plaster. Accordingly the maximum size for conduit and pipe should be 1"; switch boxes and convenience outlets should not exceed 1½" in depth including plaster ring. The back of all electrical boxes conduit and cables should be covered with 15 lb. felt under metal lath fastened to the ROCKLATH.*

6. *Where a plaster surface is flush with metal, metal bucks, metal windows, or metal base, the plaster should be grooved between the two materials.*

7. *On all fire-rated partitions, all metal base assemblies should be filled with a grout of gypsum plaster.*

8. Fixture Attachment—*Lightweight fixtures and trim shall be installed by drilling set dry plaster to a minimum depth of ¾" and inserting a plastic plug or other expandable anchor for anchorage of attachment screws.*

Cabinet and shelving grounds shall consist of ¾" (actual dimension) by 1½" wood strips, having 6d (minimum) coated nails driven ⅝" into both edges at not over 12" o.c., attached to the ROCKLATH by nailing, wire tying or bolting.

9. *This partition is not recommended for use where the unplastered face of the gypsum lath is not protected from wetting or high humidity such as behind a preset bath tub. The USG Metal Lath, Channel Stud and Plaster partition is recommended for use in such areas (see USG Systems Folder).*

10. Ceramic Tile—(*Where ceramic tile is required over ROCKLATH, self-furring diamond mesh metal lath shall be stapled over the ROCKLATH plaster base with staples spaced approximately 8" o.c., horizontally and vertically, and portland cement-lime plaster shall be applied in scratch and brown coats to ⅝" grounds over lath as a base for the ceramic tile*). (*Ceramic tile shall be adhesively attached over the finished gypsum plaster in accordance with adhesive manufacturer's specifications.*)

11. *To retain maximum sound isolation, the integrity of the partition should not be voided by openings such as electrical outlets, medicine cabinets, vents, etc., that create sound leaks. Use sand aggregate only, do not use lightweight aggregates.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill., 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company.

a. ROCKLATH Plaster Base shall be (½", V-edge, Long Length ROCKLATH for solid partition) (⅜" square edge, Long Length Insulating ROCKLATH for exterior wall furring).

b. USG Metal Base—2½" (18) (20) ga.

c. USG Metal Base Splice Plate.

d. USG Double Metal Base Clip.

e. USG Single Metal Base Clip.

f. USG Floor Runner and Screed.

g. USG L-Type Ceiling Runner.

h. USG Ceiling Runner Clips.

i. USG Partition Terminal.

j. USG Selv-edge Cornerite (2" x 2") (3" x 3").

k. USG 4" Striplath.

l. USG Self-Furring Junior Diamond Mesh Metal Lath.

m. USG Corner Bead (specify type from page 2).

n. USG Casing Bead (specify type from page 2).

o. USG Base Screed (specify type from page 2).

p. USG Cold Rolled Channels ¾", 1½", 2".

q. USG Bracing Clips.

r. 18 Ga. tie wire.

s. USG Adjustable Wall Furring Bracket.

t. BRACE-TITE* Field Clip BT-1 (for wall furring).

u. BRACE-TITE Starter Clip BT-1 (for wall furring).

v. USG Z-Type Ceiling Runner (for wall furring).

*Reg. U.S. Pat. Off.

partition erection and plaster base attachment

Floor tracks shall be (USG 2½″ Metal Base and Double Base Clips) or (USG Floor Runner and Screed) securely attached 24″ o.c. Ceiling runner shall be USG L-Type Ceiling Runner attached 16″ o.c. and located so that the ROCKLATH will be positioned in the center of the partition.

Attachment to concrete shall be with concrete stub nails or power driven anchors; to ceiling grillage with a double strand of 18 gauge tie wire; to plaster or gypsum lath with toggle bolts or staples.

The ½″ Long Length ROCKLATH shall be cut in length to allow ¼″ minimum and 1¼″ maximum top clearance at the ceiling. Erect vertically with the V-joint edges brought into close contact with the adjacent edge. Attach ROCKLATH to the floor runner or set in a groove of the grouted metal base and securely clip to the ceiling runner with two USG Ceiling Runner Clips per board. Wire-tie the ROCKLATH securely to the jamb inserts or door frames. ROCKLATH having cut vertical edges shall be used only at the ends of partitions or at door frames and not in the central portion of the partition.

Temporary bracing shall be not less than ¾″ C.R. channels placed horizontally and 1½″ angle stiffener placed vertically. For partitions up to 8′-6″ high one horizontal brace is placed near mid-height of the partition. For partitions over 8′-6″ high two horizontal braces at third points shall be used. Vertical stiffeners placed not over 6′ o.c. shall be used on partitions over 6′ in length. The horizontal channel shall extend the full length of the partition and be fastened with USG Bracing Clip or securely wire-tied at the center of the lath and the ends of the channel. Wedge the vertical stiffeners at top and bottom and securely wire-tie to horizontal bracing. Bracing shall remain in place until the brown coat of plaster on the side opposite the bracing has set.

Grounds shall be set to provide ¾″ minimum thickness, including 1/16″ finish.

wall furring erection and plaster base attachment

Floor tracks shall be (USG Floor Runner and Screed attached 24″ o.c.) or (USG 2½″ Metal Base and Single Base Clips attached 24″ o.c., grouted and grooved).

USG L-Type Ceiling Runner shall be attached 16″ o.c. to the construction above as required, plumbed up from the floor runner, or a furring channel shall be installed 6″ from top as specified below.

USG Adjustable Wall Furring Brackets, with serrated edges up, shall be attached to the masonry walls not over 4″ from columns or other abutting construction and not over 36″ o.c. horizontally and vertically, and as required above and below windows, using (one 2″ cut nail in mortar joints of brick clay tile, or cement block or in the field of lightweight aggregate blocks) (⅝″ concrete stub nails or power-driven nails or other suitable fasteners in monolithic concrete). Fastenings shall be driven through top hole of bracket. Furring channels shall be laid horizontally on the furring brackets with the legs down, plumbed to a line with the ceiling runner and base, and wire tied to the bracket with a double strand of 18-gauge tie wire. Excess bracket length shall be bent down.

⅜″ Long Length Insulating ROCKLATH shall be applied with the long edges vertically and butted lightly, with the foil facing the furred space. The bottom of the lath shall be set in the groove provided in the base grout or wood runner. The top of the lath shall be wire tied over a nail at the edges to each intermediate horizontal channel. ROCKLATH shall be cut and fit to allow slight clearance around window frames.

4″ Striplath shall be applied over the full length of all ROCKLATH joints above and below windows.

Grounds shall be set to provide ¾″ minimum plaster thickness, including 1/16″ finish.

lathing accessories

a. Metal Base 2½ inch, (18) (20) gauge, painted, shall be notched to a neat miter in forming all angles. In continuous runs, ends shall be evenly butted and internally spliced with a splice plate. Base shall be securely held in place by engaging the base clips.

b. Cornerite (2″ x 2″) (3″ x 3″) shall be installed in all interior plaster angles. Staple at the edges.

c. Metal Corner Bead No. (000000) shall be provided on all external plaster corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. Fasten securely with galvanized staples, etc., spaced not over 8″ o.c.; stagger in two wings.

d. Casing Bead No. (000000) shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed.

e. Reinforcing—Install a strip of self-furring diamond mesh lath over joints between dissimilar plaster bases. At all openings, reinforce the corners attaching a 12″ x 24″ piece of self-furring diamond mesh lath diagonally across the corners.

f. USG Partition Terminals shall be installed at partition terminals and cased openings where indicated on the drawings. Staple or wire-tie securely in place.

*TRADEMARKS: The following trademarks are owned and/or registered in the U.S. Patent Office by United States Gypsum Company, and are used throughout this catalog to designate particular products manufactured by that company: USG (metal products); ROCKLATH (plaster base); BRACE-TITE (lathing system).

NOTE: Since methods and conditions of application and use are beyond our control, the United States Gypsum Company will not be responsible for failure of its products when not used according to our directions and specifications.

UNITED STATES GYPSUM

partitions

a

USG® 2″ Solid Gypsum Drywall

1046

A.I.A. File No. 20-B-2.1

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
2 hrs.	Solid Drywall—½″ SHEETROCK FIRECODE gypsum wallbd faces ea side over 1″ USG gypsum corebd—face layers lamin—joints stag & fin—USG #218 track at flr—½″ met trim at sidewall/clg wt 8 width 2″	T-1339-OSU (f)	N/A		120	Difficult to install electrical box outlets	a-1046
2 hrs. est	Solid Drywall—⅝″ SHEETROCK FIRECODE gypsum wallbd faces ea side over 1″ USG gypsum corebd—face layers lamin—joints stag & fin wt 9 width 2¼″	TL-59-98 (s)	34		124		a-1046
2 hrs.	Solid Drywall Vent Shaft—⅝″ SHEETROCK FIRECODE gypsum wallbd faces ea side over 1″ USG gypsum corebd—face layers lamin & screw att—joints stag & unfin—⅞″x1⅜″ angle runners horiz at flr clg & qtr points wt 9.4 width 2¼″	UL Des 21-2 hr (f)	N/A		124		a-1046
1½ hrs.	Solid Drywall—½″ SHEETROCK gypsum wallbd faces ea side over 1″ USG gypsum corebd—face layers lamin—joints stag & fin—1″ sq wd runner ea side wt 8 width 2″	T-1175-OSU (f)	N/A		105		a-1046

description

In this non-load bearing partition assembly SHEETROCK* Gypsum Wallboard face layers are job-laminated to both sides of USG Coreboard. The Coreboard, a 1″ thick fireproof gypsum core encased in strong gray liner paper on both sides and long edges, is 24″ wide and mill-fabricated to standard lengths. Integrally formed "V" T & G edges facilitate accurate alignment of the coreboard during erection to metal floor and ceiling runners. The partition when completed with the PERF-A-TAPE* Joint System and DUR-A-BEAD* Corner Reinforcement is ideally suited for interior dividers and vent shaft construction requiring a 2-hour fire resistance rating.

SHEETROCK for this assembly is ½″ or ⅝″ thick and available in two types (see Specifications page 5). SHEETROCK FIRECODE* Gypsum Wallboards have a specially formulated core containing special mineral materials that generally obtain higher fire resistance ratings than with plain SHEETROCK wallboard (see table above).

function and utility

Fire Resistant—Constructed of incombustible components (except when wood runners are used), the system has obtained fire endurance and hose stream ratings of 2 hours. Ideal as vent shaft.

Versatile—Adaptable for use in virtually every type of new construction or alteration work for permanent space division. In remodeling or modernization, normal work proceeds with a minimum of disturbance because these job-erected partitions are quickly and easily installed.

Easily Decorated—A highly suitable base for any decorative treatment—paint, wallpaper, fabrics or plastic films.

Economical—Erects faster than most other types of partitions. Utilizes low-cost materials and a minimum number of components. In addition, the 2″ thickness saves space and costly floor area.

limitations

1. Non-load-bearing.

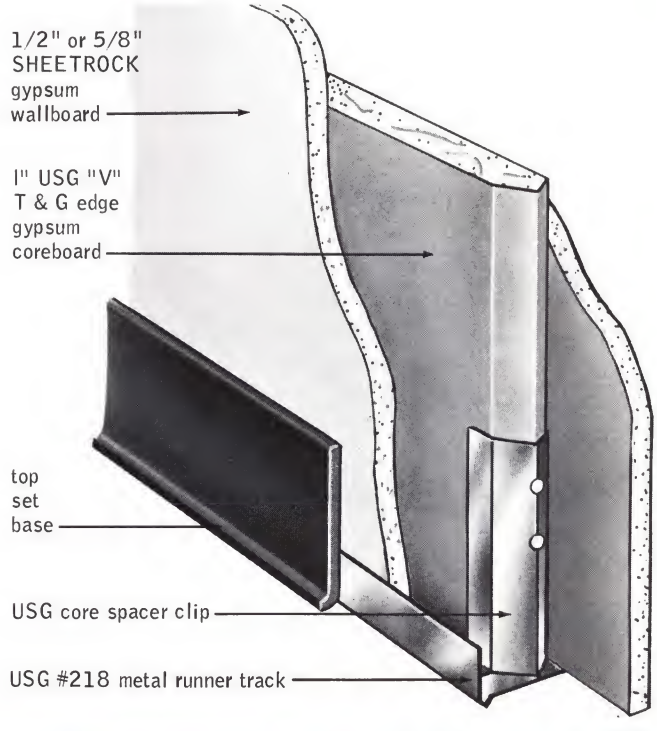
2. Limiting height: (Based on partitions with complete perimeter restraint and no openings. Where openings occur in short runs, consider limiting height as that corresponding to "over 18 ft." width between restraints.)

width between restraints	2″ solid partition	2¼″ solid partition (1)
Up to 12′	12′	14′
12′ to 18′	11′	13′
Over 18′	10′	12′

(1) When ⅝″ SHEETROCK Wallboard used as face layers.

3. Partition should not be used where exposed to abnormal moisture or excessively high humidity or temperature.

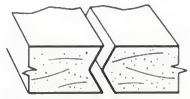
4. Installation of electrical services is difficult.



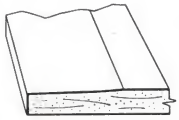
A.I.A. File No. 20-B-2.1

*Reg. U.S. Pat. Off.

components

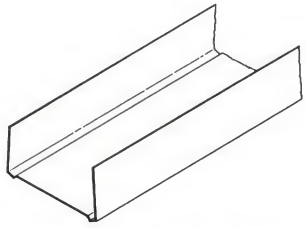


1″ "V" edged
T & G coreboard

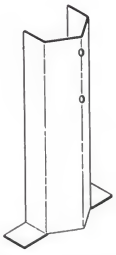


tapered edge SHEETROCK
gypsum wallboard

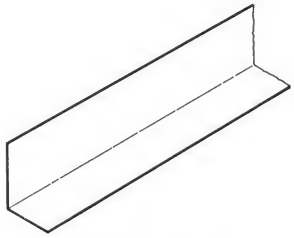
see "gypsum wallboard and joint treatment" product catalogs for full description on accessories & sizes



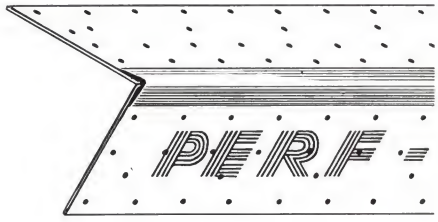
USG—218 metal runner

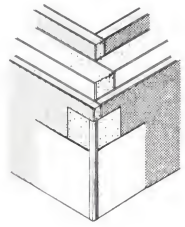


USG core spacer clip

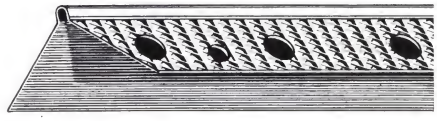


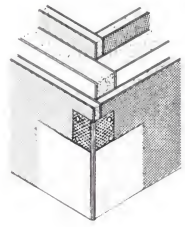
1⅜″x⅞″—22 ga.
metal angle runner



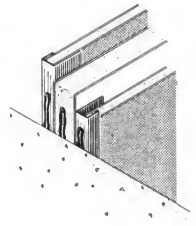


no. 100 PERF-A-BEAD





DUR-A-BEAD corner reinforcement



USG metal trim

1″ USG drywall screw—type S—bugle head

1¼″ USG drywall screw—type W—bugle head

1¼″ USG drywall screw—type S—bugle head

1⅝″ USG drywall screw—type S—trim head

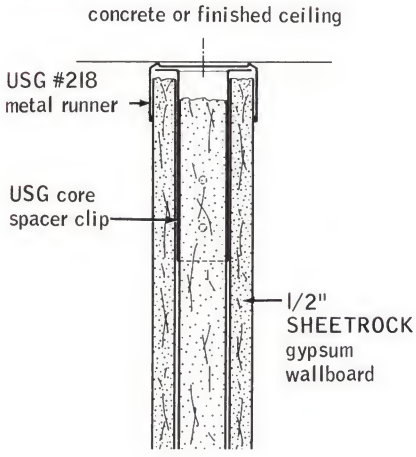
2¼″ USG drywall screw—type S—bugle head

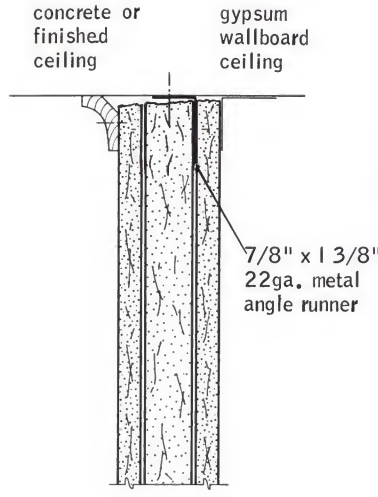
1 ½″ USG drywall screw—type G—bugle head

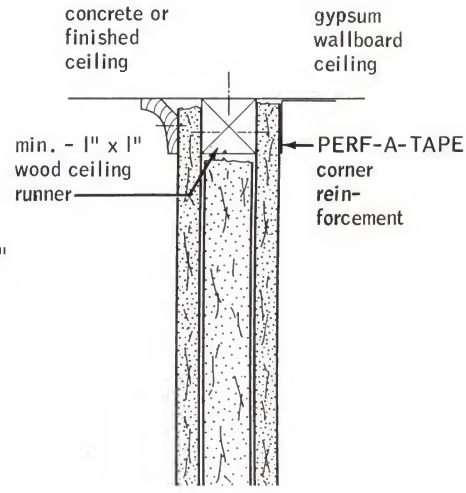
details

scale: 3" = 1'-0"

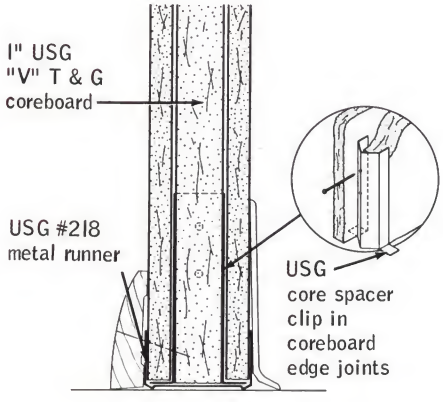
ceiling attachments



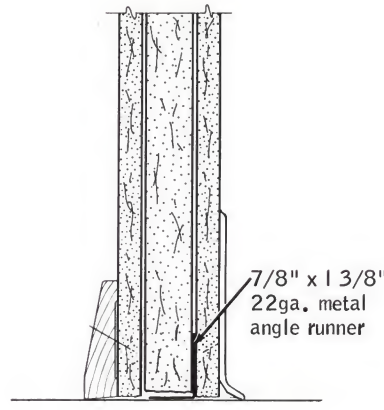




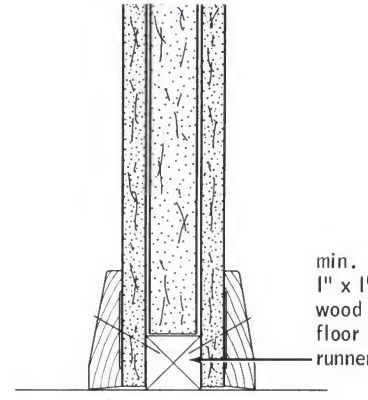
floor attachment & base



wood top set

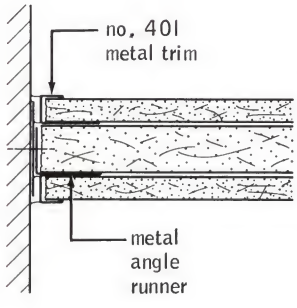


wood top set

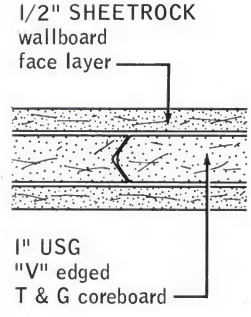


wood

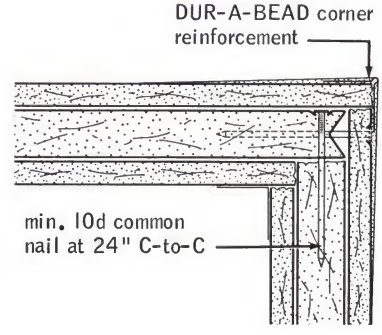
wall plan sections



partition intersection



coreboard edge joint

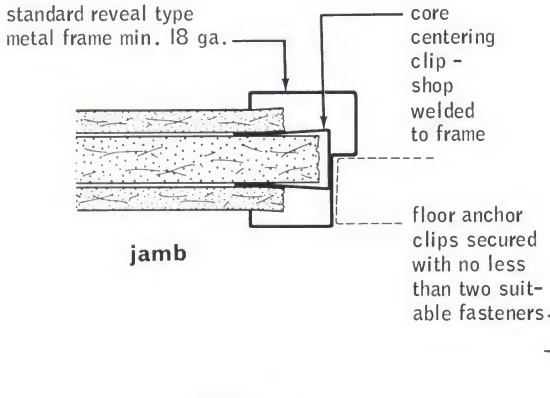


corner

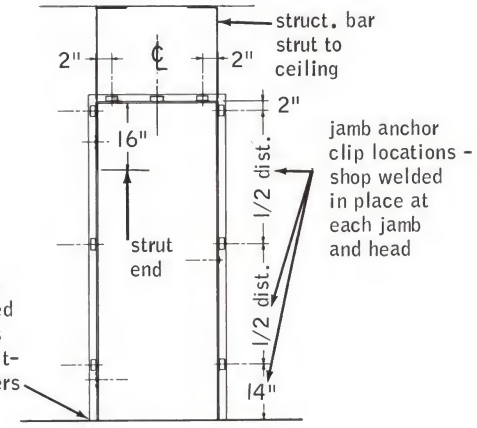
details

scale: 3″ = 1′-0″

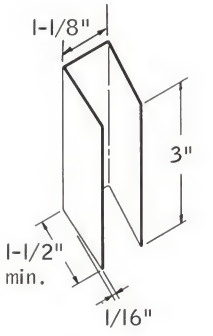
metal door frame



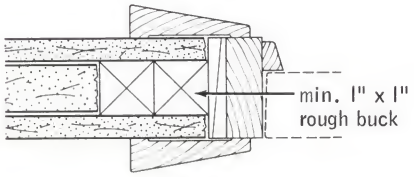
jamb



elevation

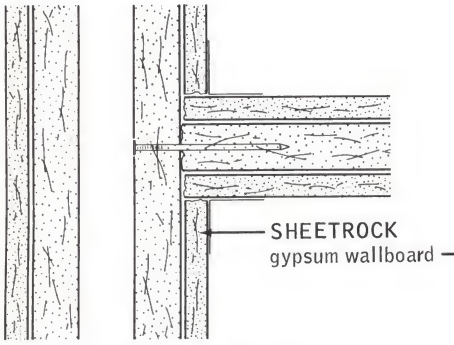


core centering
clip (18 ga. min.)

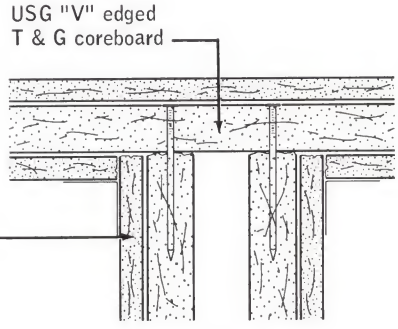


wood door frame

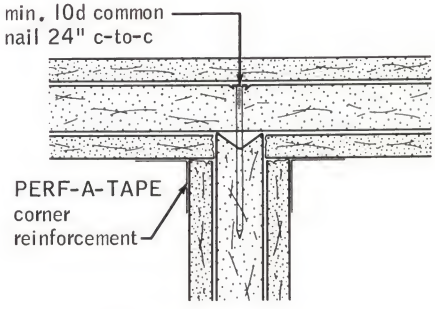
intersecting walls



double solid & 2″ solid

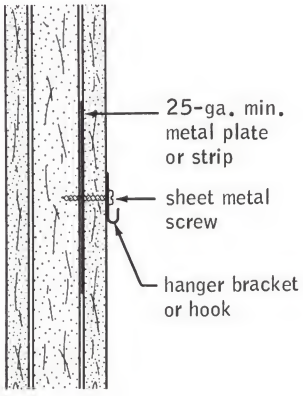


double solid

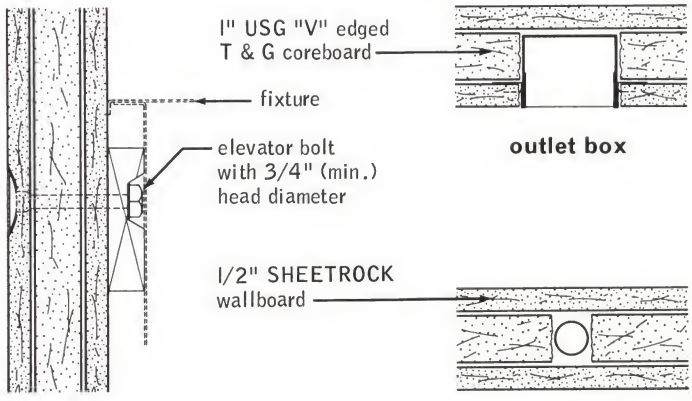


partition intersection

fixture attachment



light



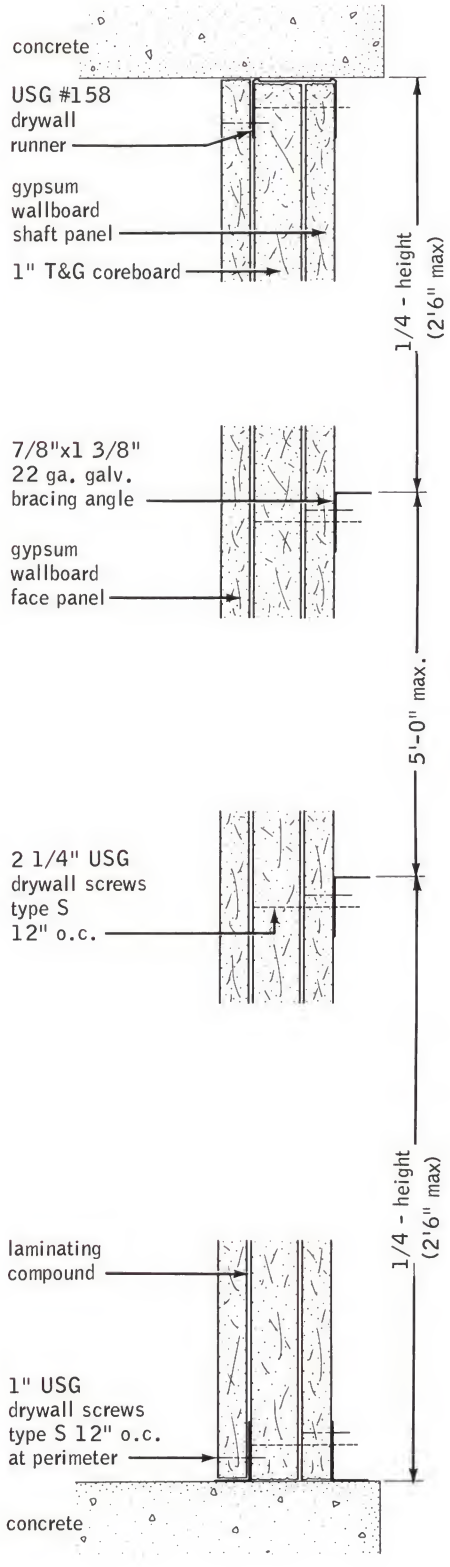
heavy

outlet box

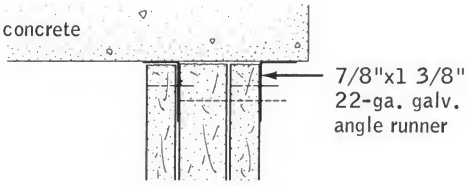
conduit

details/vent shaft

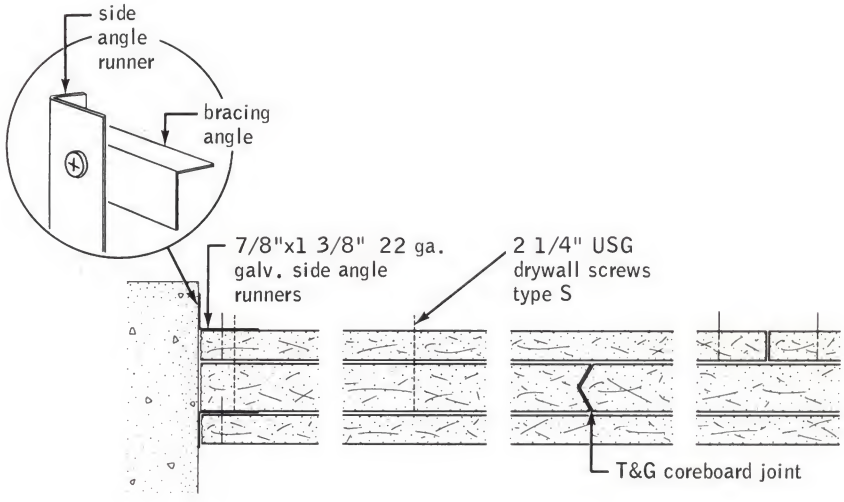
ceiling attachment



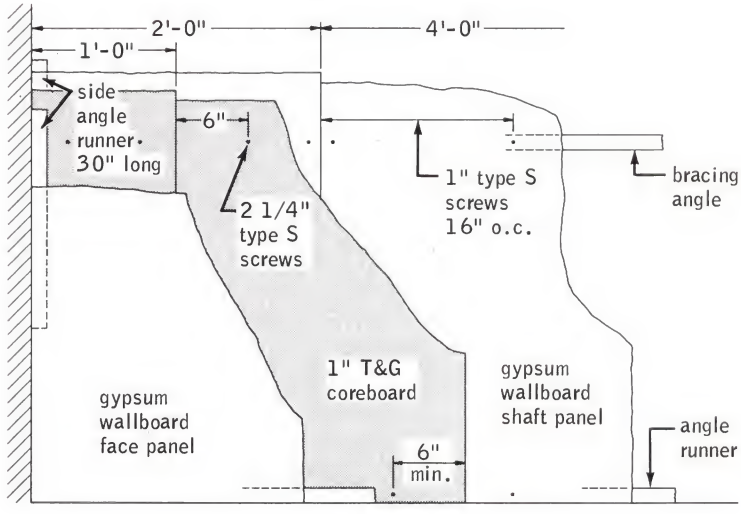
floor attachment



alternate ceiling attachment



wall plan section



wall elevation

specifications

notes to architect

1. *Metal door and borrowed light frames should be formed from 18-ga. steel minimum, shop primed. The opening between the trim returns should be accurately formed to the overall thickness of the partition.*

Floor anchor plates should be 14-ga. steel minimum, designed with two anchor holes to prevent rotation and welded to trim flanges to dampen door impact vibrations. Floor anchorage should be by two power-driven anchors or equivalent per plate. Jamb anchor clips should be formed of 18-ga. steel minimum, and welded in the jamb and head. (See details page 4.)

Door frame struts should be 1″ x ¼″ hot rolled steel bar stock. Where struts are not used, temporary bracing should be used to level and plumb frame until partition is erected.

All metal door and borrowed light frames should be spot grouted at the location of jamb anchor clips, after coreboard is installed. The grout should be raked out to allow the wallboard to be inserted into the frame. Under no conditions should the wallboard terminate against the trim return of the door frame.

Where wood door or borrowed light frames are required, the nominal 1″ x 1″ wood runner detailed for floor and ceiling runners should be used for the rough buck. In the case of door frames, the jamb section of the rough buck may serve as a strut and should extend from floor to ceiling and be securely toe-nailed to runners.

Door closers and bumpers are required on all doors where the weight of the door (including attached hardware) exceeds 50 lbs.

2. *Non-load bearing drywall partitions will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that wallboard surfaces be isolated from all structural elements by control joints or other means where:*

a. *A partition abuts any structural element or dissimilar wall or ceiling assembly.*

b. *The partition construction changes within the plane of the partition.*

In long partition runs, control joints should be provided no more than 30′ o.c. Door frames extending from floor to ceiling are recommended as control joints. For doors less than ceiling height, control joints extending from both corners of the frame to the ceiling may be used.

3. *Holes cut in a thin wallboard membrane such as door frames, borrowed lights, etc., cause a concentration of stresses in the wallboard typically at intersection of head and jamb. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

4. Electrical Fixtures—*The depth of electrical boxes should not exceed 1½″.*

5. Ceramic Tile—*SHEETROCK W/R Gypsum Wallboard is recommended as a base for the adhesive application of ceramic, metal and plastic tile.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

general conditions

In cold weather and during the period of wallboard application and joint finishing, temperatures within the building shall be maintained uniformly within the range of 55° to 70°F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

materials

See USG product folders in this series:

Joint Treatment Folder for PERF-A-TAPE Joint System Specifications.

Gypsum Wallboard Folder for information on Wallboard System Components.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. Coreboard—1″ thick, 24″ wide, USG "V" T & G edge Gypsum Coreboard, lengths as required.

b. Faceboards—(½″) (⅝″) thick, 48″ wide, (Tapered Edge SHEETROCK Wallboard) (SHEETROCK FIRECODE) lengths as required.

c. Laminating Adhesive—PERF-A-TAPE Joint Compound (embedding type) or USG Laminating Adhesive.

d. Joint Treatment—PERF-A-TAPE or DURABOND* Joint System.

e. Fasteners—(specify type from page 2).

f. USG Metal Trim (specify type from page 2).

g. USG Corner Bead—DUR-A-BEAD, PERF-A-BEAD* (specify type from page 2).

h. USG No. 218 Metal Runner.

i. USG Core Spacer Clip.

j. Metal Angle Runners—1⅜″x⅞″x22 ga.

runner erection

All partitions shall be aligned accurately according to the partition layout.

Floor and ceiling runner tracks shall be securely attached:

1. To Concrete Slabs—Using concrete stub nails or power driven anchors, spaced not to exceed 24″ o.c.

2. To Wood Framing—Using suitable fasteners spaced not to exceed 24″ o.c.

3. To Suspended Ceilings—Using toggle or molly bolts, spaced not to exceed 24″ o.c.

*Reg. U.S. Pat. Off.

partition erection

Cut coreboard to fit accurately between floor and ceiling runners and install vertically with tongue edge leading. Insert core spacer clip in floor and ceiling runner and nail clip to coreboard panel. Erect succeeding panels using the same procedure.

At partition intersections, coreboards shall be nailed together with 10d nails spaced 24″ o.c. Panels shall be inserted in jamb anchor clips at all door frames, borrowed light frames and partition terminals and spot grouted at the clip locations.

Face boards shall be cut to full floor-to-ceiling height. Apply laminating adhesive to surface of coreboard and laminate in place using moderate pressure to insure adequate bond. Offset face panel joints at least 3″ from coreboard joints. Screw face layer to coreboard at vertical joints and at center of faceboard with USG 1½″ Type G Screws. Screws along vertical edges shall occur 36″ o.c. maximum, within 2″ of joint and 12″ of both ends. Screws in field shall occur 48″ o.c. maximum and within 24″ of both ends.

Coreboards and face boards shall be cut neatly to fit around all outlets and switch boxes. Suitable fastener anchorage shall be provided as required for the attachment of shelves and cabinets.

Work done by this contractor shall be coordinated properly with that to be done by other trades.

vent shaft erection

Floor, ceiling and sidewall angle runners shall be aligned accurately according to the partition layout. Fasten runners securely to structural supports with suitable fasteners 24″ o.c. USG No. 158 metal ceiling runners shall be installed by fastening through the web; 1⅜″x⅞″x22 ga. galvanized metal angle runners on the floor and sidewalls by fastening through the short leg. As an alternate, metal angles may be used as ceiling runners. Side angle runners 30″ long shall be centered for attachment of horizontal bracing angles.

1⅜″x⅞″x22 ga. galvanized bracing angles shall be installed at quarter points down from the ceiling, up from the floor and spaced no greater than 5′ o.c. Position long leg for wallboard attachment and fasten to sidewall angles with 1″ USG Drywall Screw Type S.

⅝″ SHEETROCK FIRECODE Wallboard inner layer shall be applied vertically and fastened to angles and runners with 1″ USG Drywall Screws Type S spaced 16″ o.c. 1″ coreboard shall be erected vertically and laminated to inner wallboard layer with vertical joints staggered 12″ from wallboard joints. When No. 158 metal ceiling runner is used, the fasteners attaching the ⅝″ thick inner layer to runner may be omitted.

Second floor and side angle runners (and ceiling angles, if required) shall be positioned with the long leg against the coreboard secured to structural members with suitable fasteners and attached to coreboard with 2¼″ USG Drywall Screws Type S spaced 12″ o.c. Drive screws at least 6″ away from coreboard edges.

⅝″ SHEETROCK FIRECODE face layer shall be laminated and erected vertically with vertical joints staggered 12″ from joints in coreboard. Face layer shall be attached to angles around perimeter with 1″ Type S screws 12″ o.c.

wallboard accessories

a. PERF-A-TAPE or DURABOND Joint System shall be used on all face board joints and internal angles formed by the intersections of walls and ceilings.

b. Laminating Adhesive shall be USG PERF-A-TAPE Joint Compound (embedding type) mixed according to manufacturer's directions or USG Laminating Adhesive spread to provide adhesive beads ½″ high x 5/16″ wide at the base and spaced 4½″ o.c.

c. Metal Corner Bead No. (000000) shall be securely installed at all external corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. At least two coats of joint compound shall be applied over beads and each coat feathered out onto panel faces.

d. Metal Trim No. (000000) shall be securely installed where indicated. Finish with PERF-A-TAPE Joint Compound, as required.

e. Fasteners shall be as shown on drawings or as herein specified. Fasteners shall be driven no less than ⅜″ from ends or edges of wallboard to provide uniform dimple not over 1/32″ deep. Spot exposed fastener dimples on face layers with at least three coats of joint compound, feathered and sanded smooth.

f. Control Joints shall be provided in the face layer as indicated and shall consist of two pieces of Metal Trim back-to-back.

UNITED STATES GYPSUM

partitions

a

USG® Studwall Gypsum Drywall

1056

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
1 hr.	278 Gypsum Studwall—⅝" SHEETROCK FIRECODE gypsum wallbd—1⅝"x6" lamin gypsum studs 24" o.c.—wallbd screw att both sides 18" o.c. wt 7 width 2⅞"	UL Des 16-1 hr (f)	N/A		113	Basic interior divider—chase allows easy elect. installation	a-1056

description

In this non-load bearing partition assembly of SHEETROCK* Gypsum Wallboard face layers are job-laminated to both sides of 1⅝" x 6" gypsum studs positioned vertically 24" o.c. The SHEETROCK panels are attached to 25 ga. electro-galvanized steel floor and ceiling runners with specially designed power-driven, self-tapping steel screws. The gypsum studs, factory-laminated in stock lengths, are cut 12" shorter than the partition height to facilitate electrical installation. The partition when completed with the PERF-A-TAPE* Joint System and DUR-A-BEAD* Corner Reinforcement is ideal for use as space separation within units in all types of non-residential construction.

SHEETROCK for this assembly is ½" thick for Studwall #258 or ⅝" thick for Studwall #278 and available in two types (see Specifications, page 6). SHEETROCK FIRECODE* Gypsum Wallboards have a specially formulated core containing special mineral materials that generally obtain higher fire resistance ratings than with plain SHEETROCK wallboard (see table above).

function and utility

Fire Resistance—Constructed of incombustible components (except when wood runners are used), a fire resistance rating of 1 hour has been established for the Studwall #278 with ⅝" SHEETROCK FIRECODE face layers.

Lightweight—Excellent utility where space savings and reduced loads are design requirements:

type	thickness	weight psf.
Studwall #258	2⅝"	6 lbs.
Studwall #278	2⅞"	7 lbs.

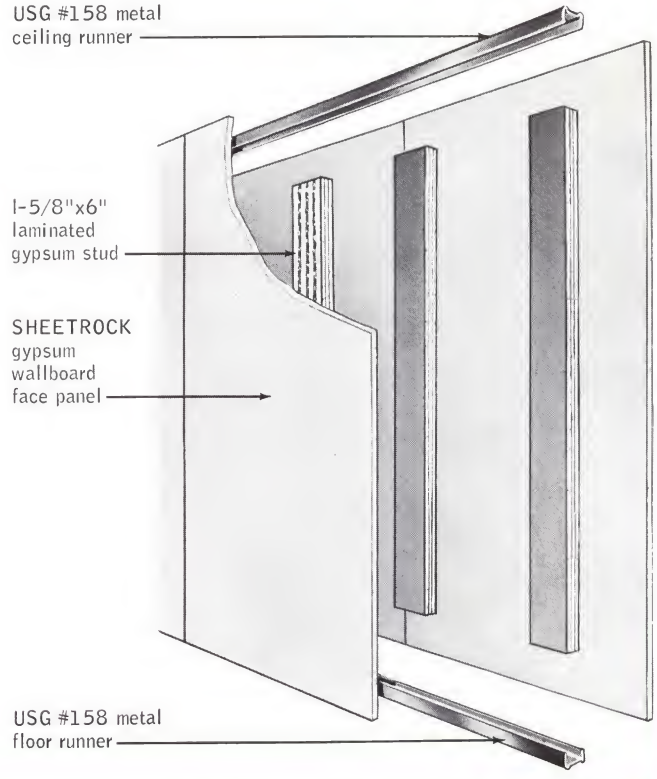
Easily Decorated—The systems inherently provide back blocking; minimize joint ridging. SHEETROCK face panels provide a highly suitable base for any decorative treatment—paint, wallpaper, fabrics or plastic films.

Economical—Utilizes low-cost materials and a minimum number of components.

Versatile—Available in two thicknesses to meet varying job requirements. Adaptable for use in virtually every type of new construction or alteration work for permanent space division within units.

limitations

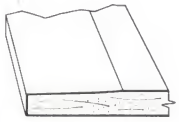
1. Non-load bearing.
2. Limiting height: 12'.
3. Partition should not be used where exposed to abnormal moisture or excessively high humidity.



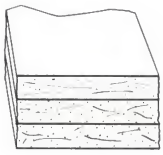
A.I.A. File No. 20-B-2.1

*Reg. U.S. Pat. Off.

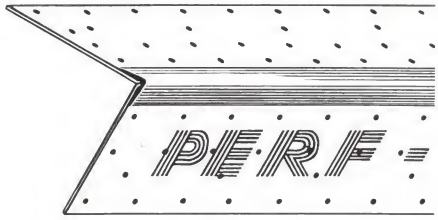
components

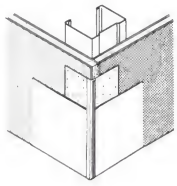


tapered edge
SHEETROCK gypsum wallboard

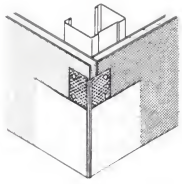


1⅝" x 6"
gypsum stud

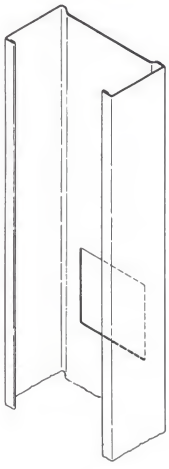




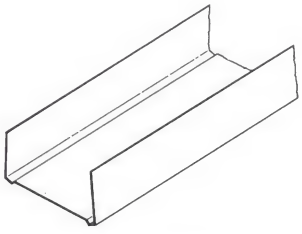
no. 100 PERF-A-BEAD*



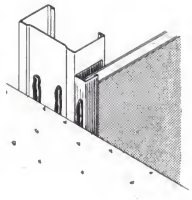
DUR-A-BEAD corner reinforcement



USG
metal stud



USG metal runner



USG metal trim

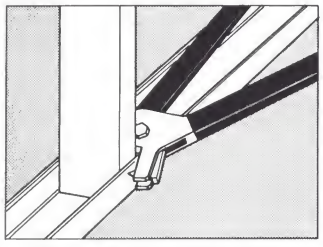
see "gypsum wallboard and joint treatment" product catalogs for full description on accessories & sizes

⅜" USG drywall screw—type S-12—pan head

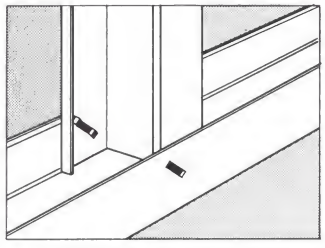
1" USG drywall screw—type S—bugle head

1⅝" USG drywall screw—type S—trim head

1 ½" USG drywall screw—type G—bugle head



pierces & folds light metals



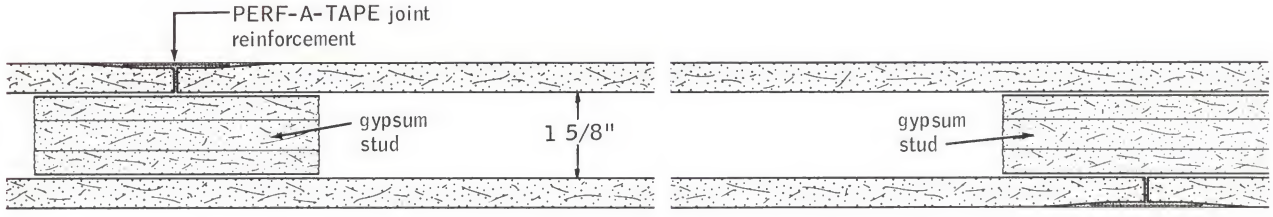
positive & permanent lock

USG metal lock fastener

*Reg. U.S. Pat. Off.

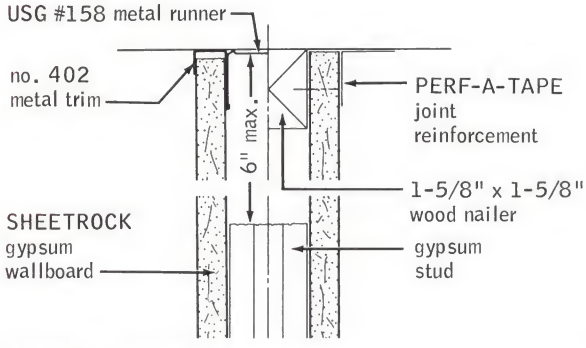
details

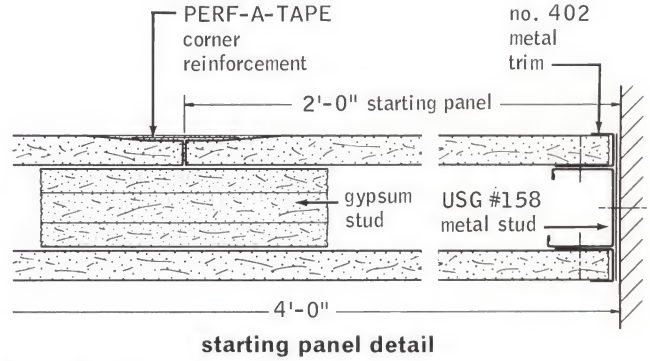
scale: 3″ = 1′-0″



typical joint detail

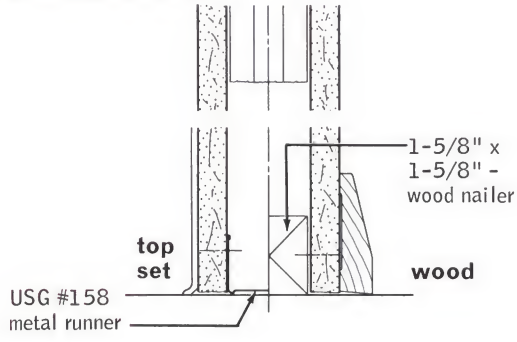
ceiling attachment



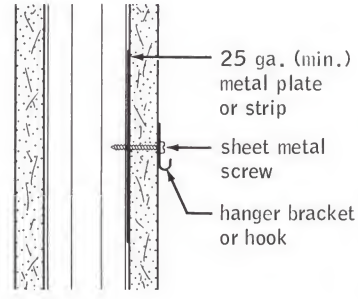


starting panel detail

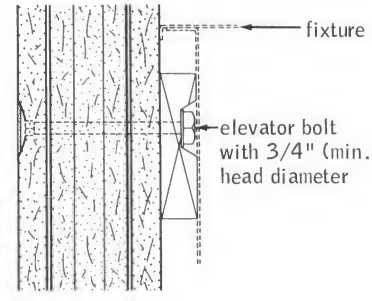
floor attachment



fixture attachment

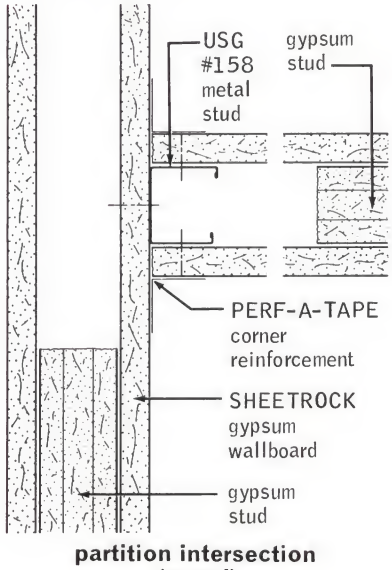


light

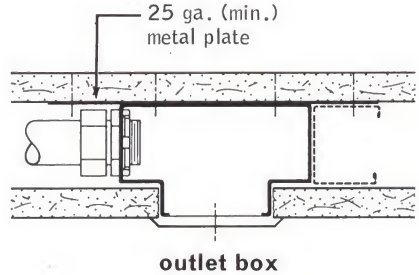


heavy

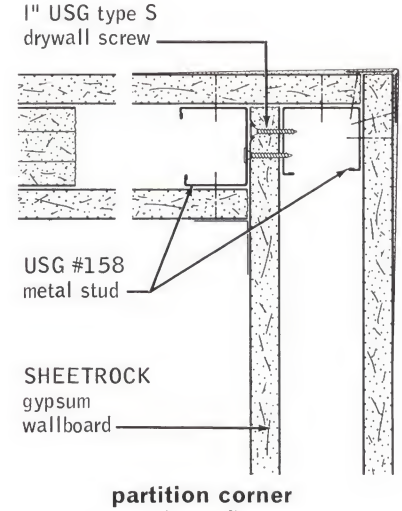
wall plan sections



partition intersection (metal)



outlet box

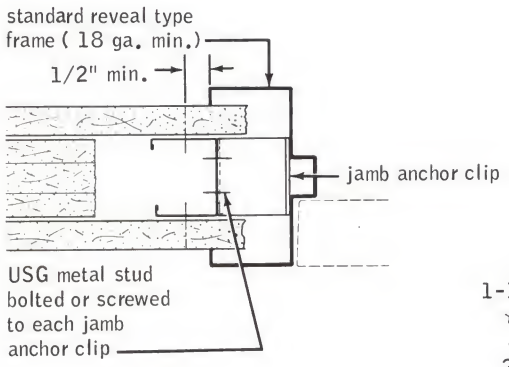


partition corner (metal)

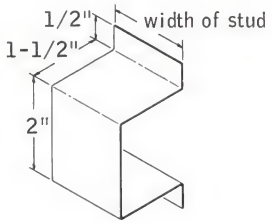
details

scale: 3″=1′-0″

metal door frames

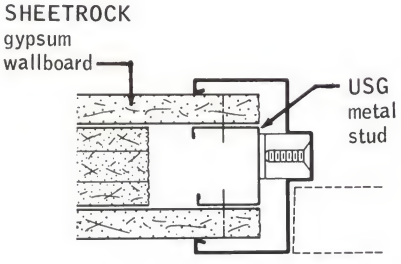


jamb



jamb anchor clip

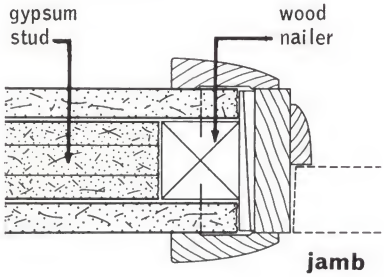
elevation
cross section thru frame



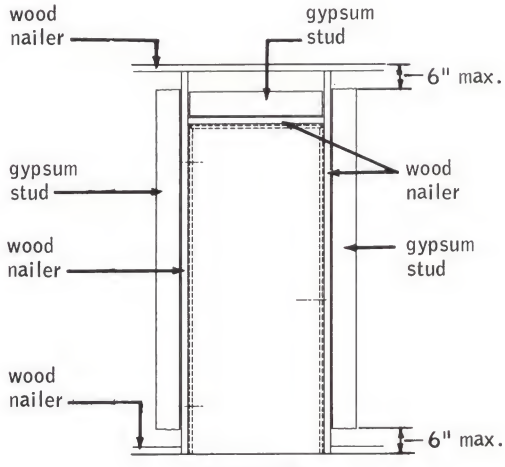
jamb

3 pc. knock down
steel frame

wood door frame



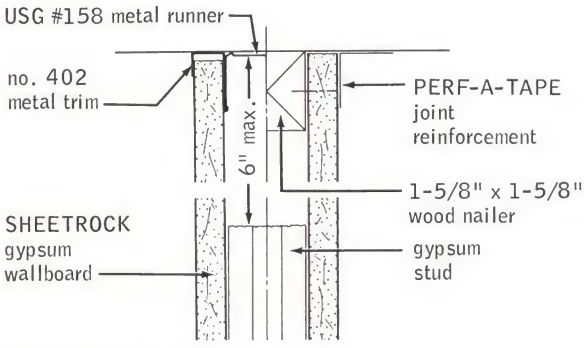
jamb



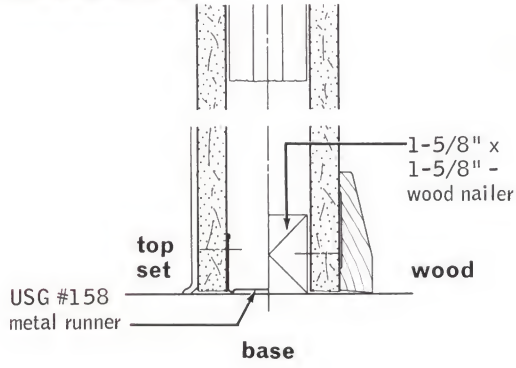
elevation
cross section thru wood door frame

details

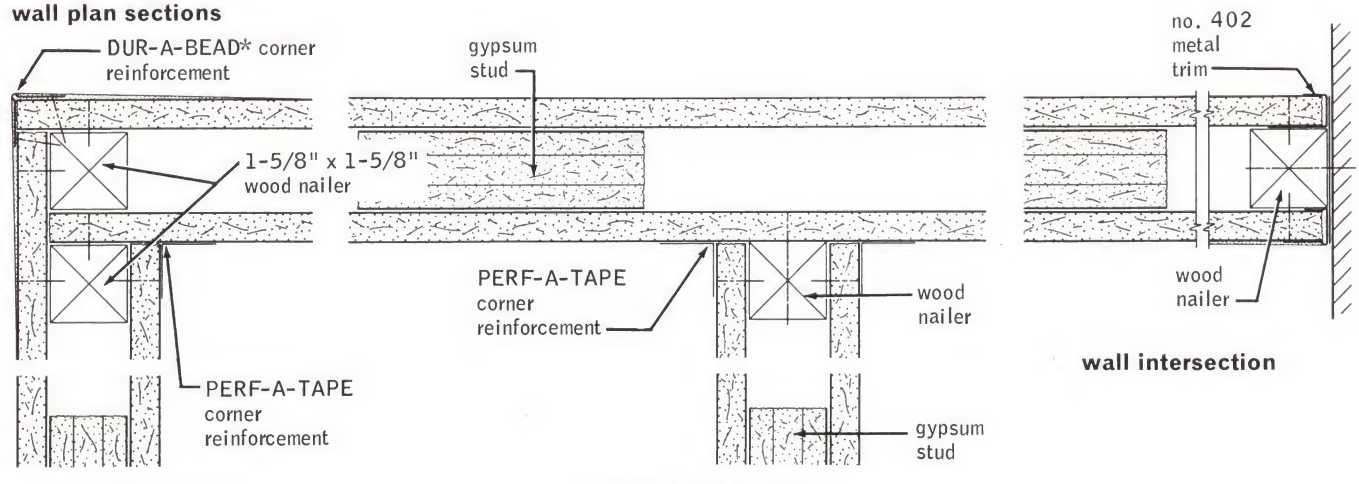
ceiling attachment



floor attachment



wall plan sections



*Reg. U.S. Pat. Off.

specifications

notes to architect

1. *Metal door and borrowed light frames should be formed from 18-ga. steel minimum, shop primed. The opening between the trim returns should be accurately formed to the overall thickness of the partition.*

Floor anchor plates should be 14-ga. steel minimum, designed with two anchor holes to prevent rotation and welded to trim flanges to dampen door impact vibrations. Floor anchorage should be by two power driven anchors or equivalent per plate. Door frames designed for attachment to a floor to ceiling height metal stud acting as a strut-stud adjacent to each jamb are recommended. Jamb anchor clips should be formed of 18-ga. steel minimum, welded in the jamb and head (see detail page 4), and screw attached to the stud.

Door frame struts, when required, should be ¼″ minimum thickness, hot rolled steel bar stock and of sufficient width to completely fill doorstop void, anchoring jamb securely. All door frame struts should be supplied as an integral part of the door frame.

All metal door and borrowed light frames should be spot grouted at the location of jamb anchor clips, after the stud and before the wallboard is installed. The grout should be raked out to allow the wallboard to be inserted into the frame. Under no conditions should the wallboard terminate against the trim return of the door frame.

Door closers and bumpers are required on all doors where the weight of the door (including attached hardware) exceeds 50 lbs.

2. *Non-load bearing drywall partitions will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that wallboard surfaces be isolated from all structural elements by control joints or other means where:*

a. *A partition abuts any structural element or dissimilar wall or ceiling assembly.*

b. *The partition construction changes within the plane of the partition.*

In long partition runs, vertical control joints should be provided at intervals no greater than 30′ o.c. Door frames extending from floor to ceiling are recommended as control joints. For doors less than ceiling height, control joints extending from both corners of the frame to the ceiling may be used.

3. *Holes cut in a thin wallboard membrane such as door frames, borrowed lights, etc., cause a concentration of stresses in the wallboard typically at intersection of head and jamb. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

4. Electrical Fixtures—*The depth of electrical boxes should not exceed* **1½″**. *A 25-ga. (min.) galvanized steel plate should be placed behind all electrical boxes for reinforcing. A metal stud adjacent to the electrical box may be desired to provide additional reinforcement.*

5. Ceramic Tile—*The use of SHEETROCK W/R Gypsum Wallboard is recommended to provide a base for the adhesive application of ceramic, metal and plastic tile.*

6. *Where wood base is required, it should be applied with trim head screws placed at each stud location and midway between stud locations (12″ o.c.) and at other points where required.*

7. *The use of a non-hardening caulking material to seal all cut-outs, such as at electrical fixtures and to seal all intersections with the adjoining structure is recommended to improve sound control. Eliminate cutting holes back to back and adjacent to each other.*

8. Fixture attachment—*Wood or metal mounting strips for cabinets or shelving should be bolted through the wallboard and studs using an elevator bolt with a ¾″ (min.) head diameter. Only lightweight fixtures should be attached to face layer between gypsum studs using sheet metal screws and 25-ga. (min.) steel plate or strip.*

The most expedient way to obtain additional informatipn on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

general conditions

In cold weather and during the period of wallboard application and joint finishing, temperatures within the building shall be maintained uniformly with the range of 55° to 70° F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

materials

See USG product folders in this series:

Joint Treatment Folder for Joint System Specifications.

Gypsum Wallboard Folder for information on Wallboard System Components.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company.

a. Faceboards—(½″) (⅝″) thick, 48″ wide Tapered Edge SHEETROCK (Regular) (FIRECODE), lengths as required.

b. Gypsum Studs—1⅝″ x 6″ USG Gypsum Studs, factory laminated (½″-⅝″-½″) in stock lengths.

c. USG DWR-158 (1⅝″) Runner.

d. USG DWS-158 (1⅝″) Metal Stud.

e. Laminating Adhesive—PERF-A-TAPE Joint Compound (embedding type) or USG Laminating Adhesive.

f. Joint Treatment—PERF-A-TAPE or DURABOND* Joint System.

g. Fasteners—(specify type from page 2).

h. USG Metal Trim (specify type from page 2).

i. USG Corner Bead—DUR-A-BEAD, PERF-A-BEAD* (specify type from page 2).

*Reg. U.S. Pat. Off.

erection and lamination

All partitions shall be aligned accurately according to the partition layout.

Floor and ceiling runners shall be securely attached to concrete slabs with concrete stub nails or power-driven anchors, to suspended ceilings with toggle or molly bolts, to wood framing with suitable fasteners. Space fasteners not to exceed 24″ o.c. on ceilings and walls and 16″ o.c. on floors.

Metal studs shall be installed vertically at "T" intersections, partition terminals and intersections with structural members or walls. Securely fasten all studs to floor and ceiling runners with the USG Metal Lock Fastener.

Gypsum wallboard face layers shall be cut to full floor-to-ceiling height for vertical installation. The ends of the face panels shall fit over the runner flanges. Vertical joints shall occur over gypsum studs and shall be staggered on opposite sides of the partition. Wallboard shall be cut to fit neatly around all outlets and switch boxes. Suitable fastener anchorage shall be provided as required for the attachment of shelves and cabinets. Work done by this contractor shall be coordinated properly with that done by other trades.

Gypsum studs shall be laminated to the back of face panels at the center line prior to erection. Studs shall terminate no more than 6″ from top and bottom edges of face panels. Allow adhesive to set and dry before moving panels.

Erect face panels with studs attached alternately to opposite sides of the partition. Securely laminate face layer to gypsum studs at vertical joints. Gypsum studs in completed assembly shall be no greater than 24″ o.c. Fasten face layers to floor and ceiling runners and to vertical flanges of all metal studs with 1″ USG Drywall Screws Type S spaced 12″ o.c. Screw face layers to gypsum studs with 1½″ USG Drywall Screws Type G. Screws along vertical edges shall occur 36″ o.c. maximum, within 2″ of joint and 12″ of both ends. Screws in field shall occur 48″ o.c. maximum and within 24″ of both ends.

Vertical panel joints shall be kept at least 6″ away from structural members, partition terminals, intersections, corners, doors and other openings. Partition corners shall contain two metal studs, one in each wall cavity, erected vertically, fastened securely to floor and ceiling runners, and attached to each other through one face layer with 1″ USG Drywall Screws Type S spaced 24″ o.c.

door frames

Floor to ceiling height metal studs shall be inserted into each side of the steel door frame to act as a strut-stud. Attach strut-studs to floor and ceiling runners with the USG Metal Lock Fastener and to each adjacent jamb anchor clip with two ⅜″ USG Drywall Screws Type S-12, pan head. Over the metal door install a cut-to-length section of runner with flanges slit and web bent to allow flanges to overlap and attach to adjacent strut-studs. A cut-to-length stud extending from the doorhead runner to the ceiling runner shall be centered between strut-studs and securely fastened to runners.

wallboard accessories

a. PERF-A-TAPE or DURABOND Joint System shall be used on all face board joints and internal angles formed by the intersections of walls and ceilings.

b. Laminating Adhesive shall be PERF-A-TAPE Joint Compound (embedding type) mixed according to manufacturer's directions or USG Laminating Adhesive spread to provide adhesive beads ⅝″ high x ½″ wide at the base and spaced 2″ o.c. and 1″ away from each edge of the gypsum studs.

c. Metal Corner Bead No. (000000) shall be securely installed at all external corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. At least two coats of joint compound shall be applied over beads and each coat feathered out onto panel faces.

d. Metal Trim No. (000000) shall be securely installed where indicated. Finish with PERF-A-TAPE Joint Compound, as required.

e. Fasteners shall be as shown on drawings or as herein specified. Fasteners shall be driven not less than ⅜″ from ends or edges of wallboard to provide uniform dimple not over 1/32″ deep. Spot exposed fastener dimples on face layers with at least three coats of joint compound, feathered and sanded smooth.

f. Control Joints shall be provided in the face layer as indicated and shall consist of two pieces of metal trim back-to-back located over a stud.

UNITED STATES GYPSUM

partitions

a

USG® Ribwall Gypsum Drywall

1066

A.I.A. File No. 20-B-2.1

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
2 hrs.	418 Gypsum Ribwall—2 layers ⅝" SHEETROCK FIRECODE gypsum wallbd ea side—1"x6" gypsum ribs 24" o.c. lamin betw base layers—wallbd screw att—joints fin wt 12 width 4⅛"	UL Des 17-2 hr (f) TL-63-15 (s)	51		165	Has design flexibility for pipe chase or party walls	a-1066
1 hr. est	368 Gypsum Ribwall—⅝" SHEETROCK FIRECODE gypsum wallbd—1⅝"x6" gypsum ribs 24" o.c. lamin betw single layer wallbd ea side—wallbd screw att at joints—joints fin wt 8 width 3¾"	TL-62-285 (s)	43		130		a-1066

description

These incombustible non-load bearing partition assemblies are of two types that incorporate cavity space 1⅝" to 2½" deep. The cavity improves fire and sound resistance and accommodates electrical services and plumbing. Opposite faces are reinforced by attached gypsum ribs, but are not joined by common ribs.

#418 Ribwall consists of a double row, each side, of ⅝" SHEETROCK* FIRECODE* Gypsum Wallboard face layers job-laminated to staggered 1" x 6" gypsum ribs. The SHEETROCK panels are attached to 25 ga. electrogalvanized steel floor and ceiling runners with specially designed power-driven, self-tapping steel screws. The gypsum ribs, snapped and separated on the job from stock lengths of 1" Coreboard prescored 6" o.c., are cut 12" shorter than the partition height to provide electrical chases. The partition when completed with the PERF-A-TAPE* Joint System and DUR-A-BEAD* Corner Reinforcement has very good sound attenuation characteristics (see table above).

#368 Ribwall consists of ⅝" SHEETROCK FIRECODE Wallboard face layers job-laminated to 1⅝" x 6" gypsum ribs. The ribs are mill-fabricated, staggered 12" o.c. and cut 12" shorter than the partition height. The SHEETROCK Panels are screw-attached to both sides of DWR-212 (2½") floor and ceiling runners.

SHEETROCK for these assemblies is ⅝" thick and available in two types (see Specifications, page 6). Tapered edge SHEETROCK Wallboard may be used for #368 Ribwall; SHEETROCK FIRECODE Gypsum Wallboard is used for #418 Ribwall. Lower cost BAXBORD* Gypsum Backing Board may be used as a base layer for Ribwall #418. SHEETROCK FIRECODE Gypsum Wallboards have a specially formulated core containing special mineral materials that generally obtain higher fire resistance ratings than with regular SHEETROCK wallboard (see table above).

function and utility

Fire Resistance—Constructed of incombustible components, the Ribwall #418 has a fire resistance rating of 2 hours.

Sound Transmission—Ribwall #418 has obtained a 51 sound transmission class rating suitable for party walls. Ribwall #368 has a 43 STC rating suitable for low-cost partitions where sound isolation is secondary.

test no.	method	decibel frequency in cps 125	175	250	350	500	700	1000	1400	2000	2800	4000	STC
TL-63-15	Lab	41	40	42	45	49	50	53	53	51	54	60	51
TL-62-285	Lab	29	30	36	39	42	42	43	46	42	44	50	43

Lightweight—Space savings and reduced loads are superior for sound and fire ratings obtained. #368 Ribwall—thickness 3¾", weight 8 psf; #418 Ribwall—thickness 4⅛", weight 12 psf.

Easily Decorated—The systems inherently provide backblocking; minimize joint ridging. SHEETROCK face panels provide a highly suitable base for any decorative treatment—paint, wallpaper, fabrics or plastic films.

Economical—Utilizes low-cost materials and a minimum number of components.

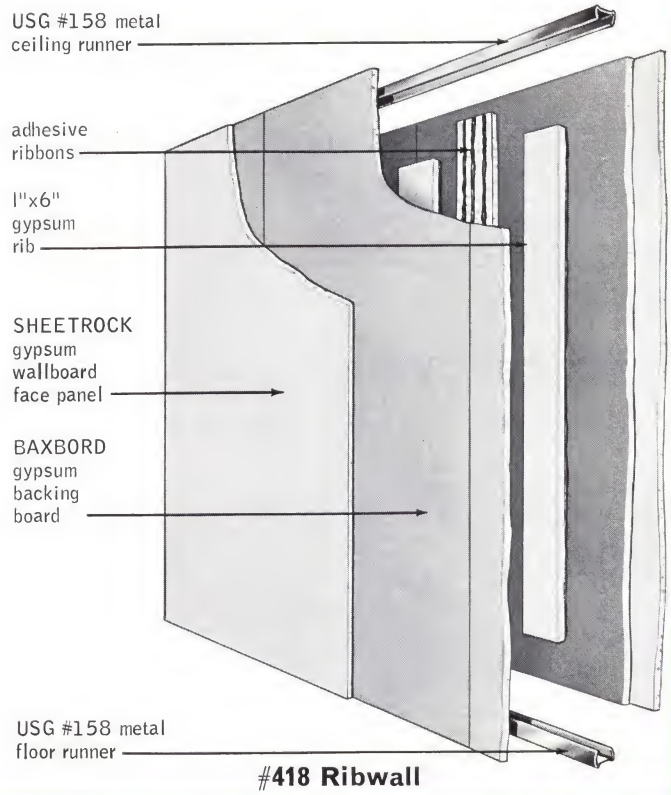
Versatile—#418 Ribwall is adaptable for use as party walls in virtually every type of new construction or alteration where privacy is important. Has design flexibility for use as vent shafts.

limitations

1. Non-load bearing.

2. Limiting height: 8′ for #368 Ribwall; 12′ for #418 Ribwall with restraints less than 20′, 10′ with restraints over 20′.

3. Partition should not be used where exposed to abnormal moisture or excessively high humidity.

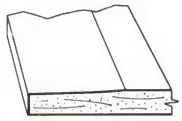


#418 Ribwall

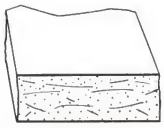
A.I.A. File No. 20-B-2.1

*Reg. U.S. Pat. Off.

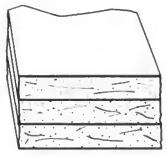
components



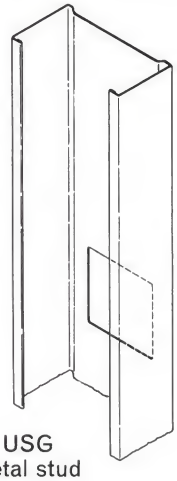
tapered edge SHEETROCK gypsum wallboard



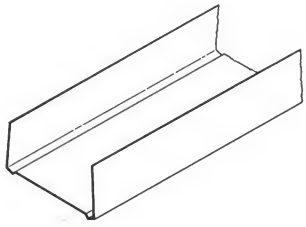
1″ x 6″ gypsum rib



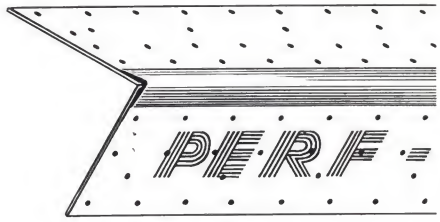
1⅝″ x 6″ gypsum rib

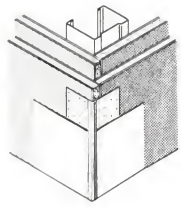


USG metal stud

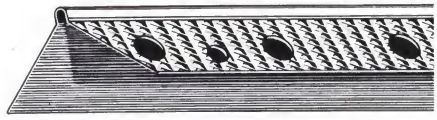


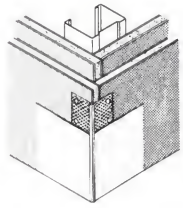
USG metal runner



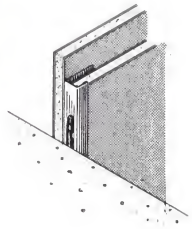


no. 100 PERF-A-BEAD*





DUR-A-BEAD* corner reinforcement



USG metal trim

see "gypsum wallboard & joint treatment" product catalogs for full description on accessories

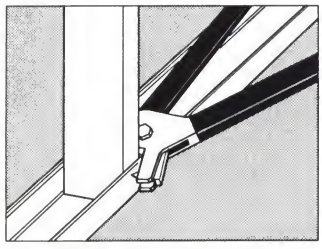
⅜″ USG drywall screw—type S-12—pan head

1″ USG drywall screw—type S—bugle head

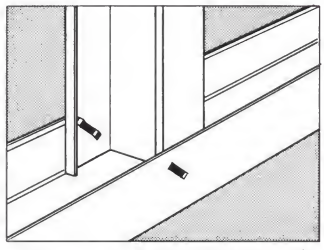
2¼″ USG drywall screw—type S—bugle head

2¼″ USG drywall screw—type S—trim head

1 ½″ USG drywall screw—type G—bugle head



positive & permanent lock



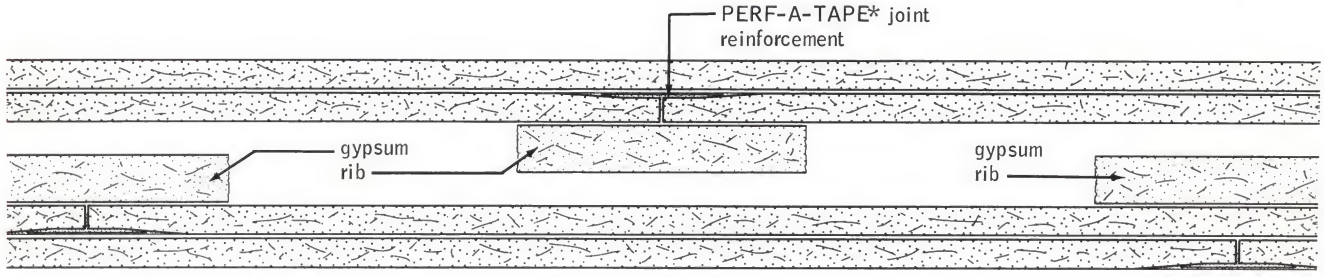
pierces & folds light metal

USG metal lock fastener

*Reg. U.S. Pat. Off.

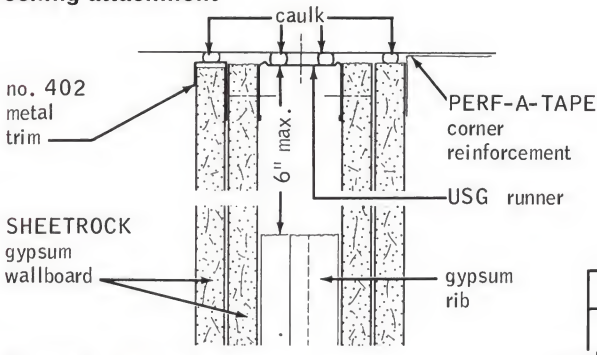
details/#418 Ribwall

scale: 3″ = 1′-0″

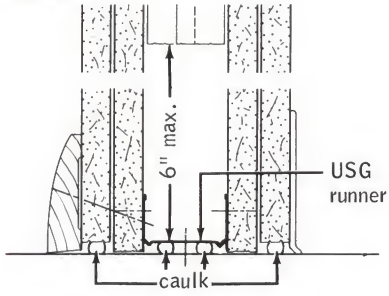


typical joint detail

ceiling attachment

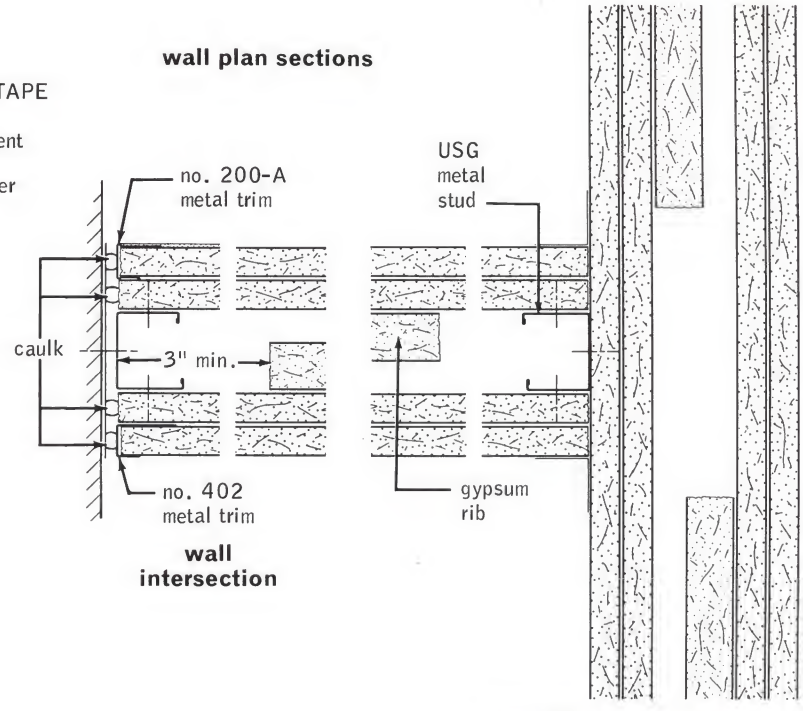


floor attachment



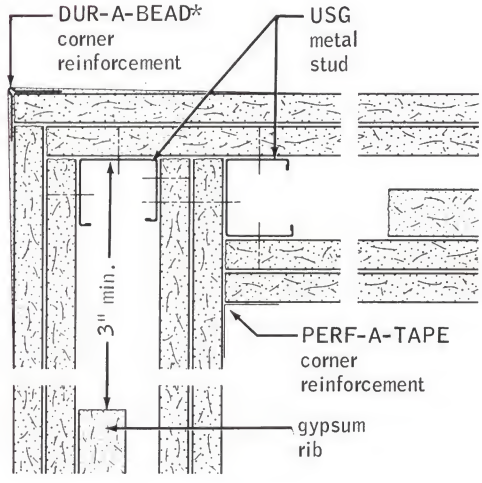
wood **top set**

wall plan sections

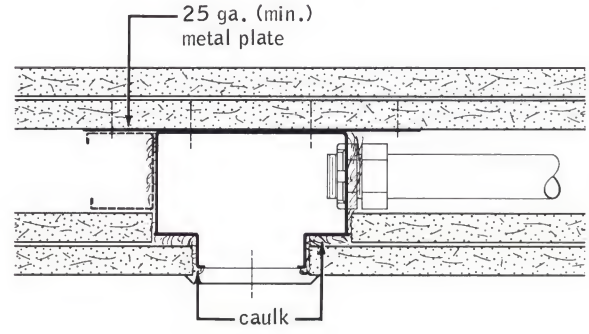


wall intersection

partition intersection



partition corner



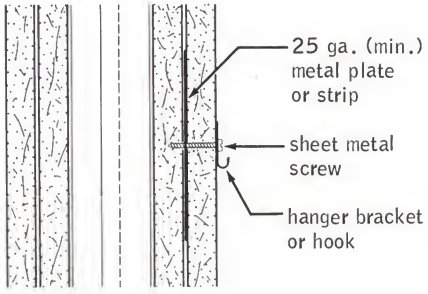
outlet box

*Reg. U.S. Pat. Off.

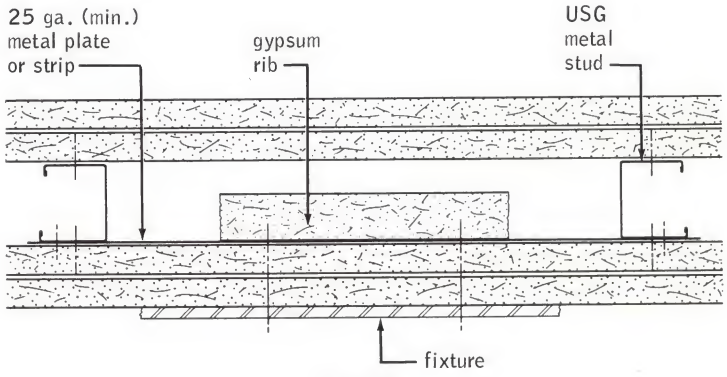
details / #418 Ribwall

scale: 3" = 1'-0"

fixture attachment

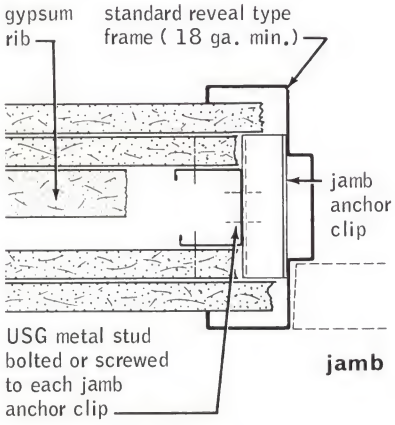


light

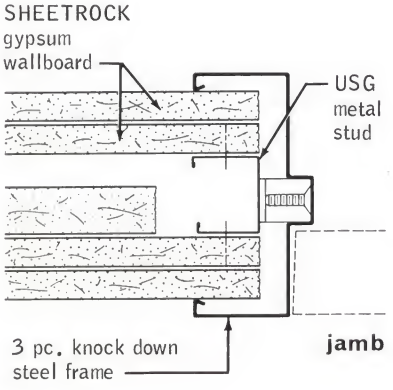


heavy

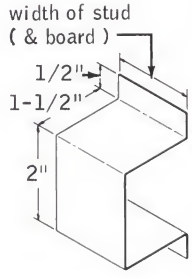
metal door frames



jamb



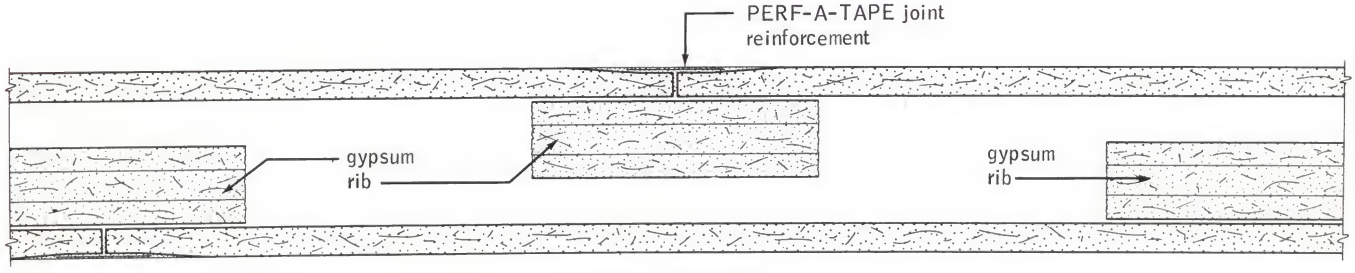
jamb



jamb anchor clip

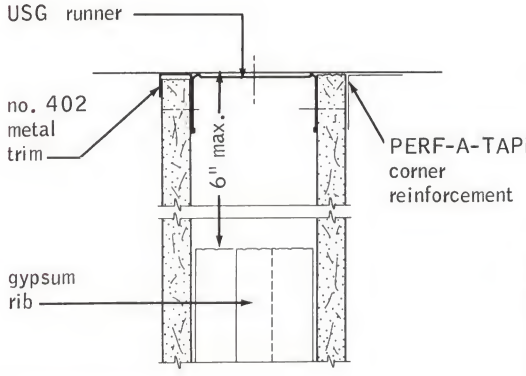
elevation
cross section thru frame

details/#368 Ribwall

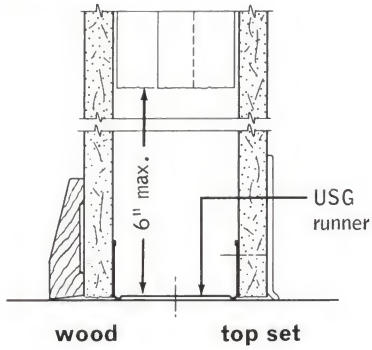


typical joint detail

ceiling attachment

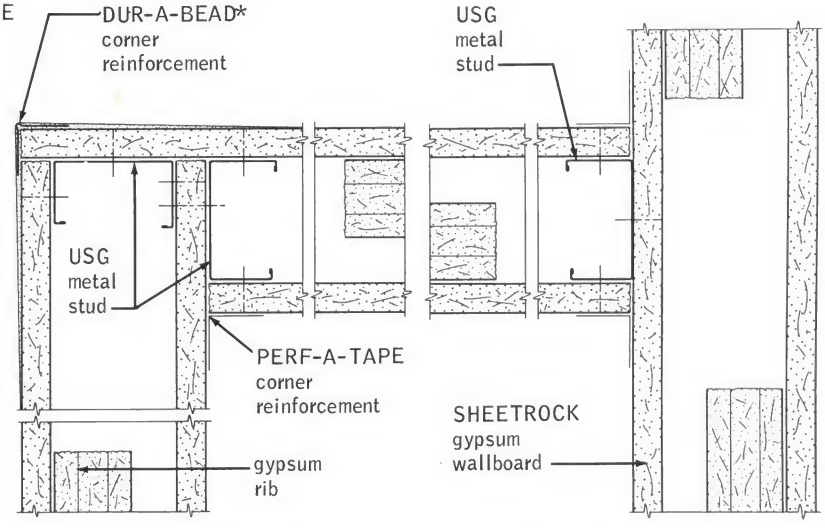


floor attachment



wood top set

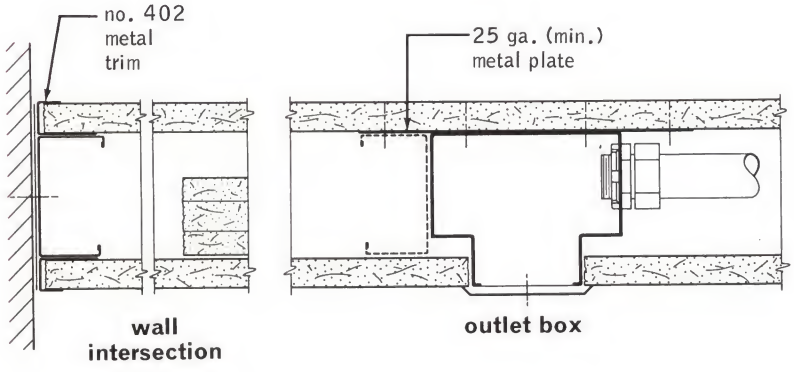
wall plan sections



partition corner

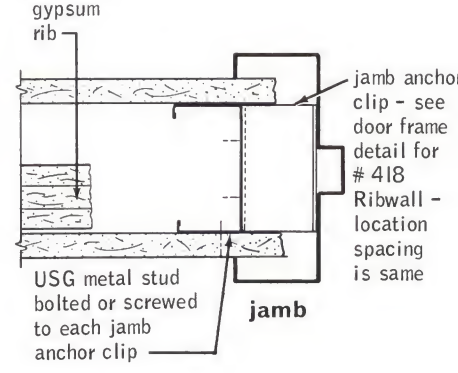
partition intersection

miscellaneous



wall intersection

outlet box



jamb

*Reg. U.S. Pat. Off.

specifications

notes to architect

1. *Where this partition is used as a sound barrier, the integrity of the partition should not be voided by doors and borrowed lights. Metal door and borrowed light frames if required should be formed from 18-ga. steel minimum, shop primed. The opening between the trim returns should be accurately formed to the overall thickness of the partition.*

Floor anchor plates should be 14-ga. steel minimum, designed with two anchor holes to prevent rotation and welded to trim flanges to dampen door impact vibrations. Floor anchorage should be by two power driven anchors or equivalent per plate. Door frames designed for attachment to a floor to ceiling height metal stud acting as a strut-stud adjacent to each jamb are recommended. Jamb anchor clips should be formed of 18-ga. steel minimum, welded in the jamb and head (see detail page 4), and screw attached to the stud.

Door frame struts, when required, should be ¼″ minimum thickness, hot rolled steel bar stock and of sufficient width to completely fill doorstop void, anchoring jamb securely. All door frame struts should be supplied as an intergal part of the door frame.

All metal door and borrowed light frames should be spot grouted at the location of jamb anchor clips, after the stud and before the wallboard is installed. The grout should be raked out to allow the wallboard to be inserted into the frame. Under no conditions should the wallboard terminate against the trim return of the door frame.

Door closers and bumpers are required on all doors where the weight of the door (including attached hardware) exceeds 50 lbs.

2. *Non-load bearing drywall partitions will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that wallboard surfaces be isolated from all structural elements by control joints or other means where:*

a. *A partition abuts any structural element or dissimilar wall or ceiling assembly.*

b. *The partition construction changes within the plane of the partition.*

In long partition runs, vertical control joints should be provided at intervals no greater than 30′ o.c. Door frames extending from floor to ceiling are recommended as control joints. For doors less than ceiling height, control joints extending from both corners of the frame to the ceiling may be used.

3. *Holes cut in a thin wallboard membrane such as door frames, borrowed lights, etc., causes a concentration of stresses in the wallboard typically at intersection of head and jamb. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the opinion of the architect, for reasons of economy or design, a control joint is not specified.*

4. Electrical Fixtures—*The depth of electrical boxes should not exceed 2⅛″. A 25-ga. (min.) galvanized steel plate should be placed behind all electrical boxes for reinforcing. A metal stud adjacent to the electrical box may be desired to provide additional reinforcement.*

5. *Where additional chases for electrical conduit or pipe are required, they may be provided by using gypsum ribs which terminate no more than 6″ from top and bottom edges of face panels.*

6. Ceramic Tile—*The use of SHEETROCK W/R Gypsum Wallboard is recommended to provide a base for the adhesive application of ceramic, metal and plastic tile.*

7. *Where wood base is required it should be applied with trim head screws placed at each stud location and midway between stud locations (12″ o.c.) and at other points where required.*

8. *The use of a non-hardening caulking material to seal all cut-outs, such as at electrical fixtures and to seal all intersections with the adjoining structure is recommended to improve sound control. Eliminate cutting holes back to back and adjacent to each other.*

9. Fixture attachment—*Metal mounting strips for cabinets or shelving should be screw attached through the first layer of wallboard into supplementary metal studs (see detail). Only lightweight fixtures should be attached to face layer between gypsum ribs using sheet metal screws and 25-ga. (min.) steel plate or strip.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

general conditions

In cold weather and during the period of wallboard application and joint finishing, temperatures within the building shall be maintained uniformly with the range of 55° to 70° F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

materials

See USG product folders in this series:

Joint Treatment Folder for Joint System Specifications.

Gypsum Wallboard Folder for information on Wallboard System Components.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. Faceboards—⅝″ thick, 48″ wide Tapered Edge SHEETROCK (Regular) (FIRECODE), lengths as required.

b. Base Layer—⅝″ thick, 48″ wide BAXBORD, 8′.

c. Gypsum Ribs—1″ x 6″ USG Gypsum Ribs, snapped and separated from 1″ x 24″ USG Coreboard prescored 6″ o.c. (for #418); 1⅝″ x 6″ Gypsum Ribs, factory laminated (for #368).

d. USG No. 158 (1⅝″)—212 (2½″) Metal Runner.

e. USG No. 158 (1⅝″)—212 (2½″) Metal Stud.

f. Laminating Adhesive—PERF-A-TAPE Joint Compound (embedding type) or USG Laminating Adhesive.

g. Joint Treatment—PERF-A-TAPE or DURABOND* Joint System.

h. Fasteners—(specify type from page 2).

i. USG Metal Trim (specify type from page 2).

j. USG Corner Bead—DUR-A-BEAD, PERF-A-BEAD* (specify type from page 2).

k. Caulking—Presstite 579.64 Mastic as manufactured by Presstite Division of Interchemical Corp.

*Reg. U.S. Pat. Off.

erection and lamination

All partitions shall be aligned accurately according to the partition layout.

Floor and ceiling runners shall be securely attached to concrete slabs with concrete stub nails or power-driven anchors, to suspended ceilings with toggle or molly bolts, to wood framing with suitable fasteners. Fasteners shall be spaced not to exceed 24″ o.c. on ceilings and walls and 16″ o.c. on floors.

Metal studs shall be installed vertically at "T" intersections, partition terminals and intersections with structural members or walls. Securely fasten all studs to floor and ceiling runners with the USG Metal Lock Fastener.

Gypsum wallboard panels shall be cut to full floor-to-ceiling height for vertical installation. The ends of the panels shall fit over the runner flanges. Vertical joints between wallboard panels shall occur over gypsum ribs and shall be staggered from the joints in the base layer and from joints on the opposite partition side. Wallboard shall be cut to fit neatly around all outlets and switch boxes. Suitable fastener anchorage shall be provided as required for the attachment of shelves and cabinets. Work done by this contractor shall be coordinated properly with that done by other trades.

Two gypsum ribs shall be laminated to the back of each wallboard panel prior to erection. Space one rib at the centerline of the panel and the other at the edge with one-half the rib attached to the panel. Ribs shall terminate no more than 6″ from top and bottom edges of panels. Allow adhesive to set and dry before moving panels.

Erect wallboard panels with ribs attached vertically to both sides of the partition. Securely laminate wallboard to gypsum ribs at vertical joints. In completed assembly gypsum ribs shall be spaced no more than 24″ o.c. and staggered on opposite partition sides so ribs are not in contact. Fasten wallboard to floor and ceiling runners and to vertical flanges of all metal studs with 1″ USG Drywall Screws Type S spaced 12″ o.c. Attach wallboard panels to gypsum ribs at vertical joints with 1½″ USG Drywall Screws Type G. Space screws along vertical joints within 12″ of runners, within 2″ of joint and 36″ o.c. maximum. Space screws in field within 24″ of runners and 48″ o.c. maximum. Screws in field of base layer on #418 ribwall may be omitted.

Face panels on #418 ribwall shall be applied vertically and staggered so that vertical joints occur half way between those of the base layer. Laminate face layer to base layer and hold in place with 1½″ USG Drywall Screws Type G spaced as described above.

Vertical panel joints shall be kept at least 6″ away from structural members, partition terminals, intersections, corners, doors and other openings. Partition corners shall contain two metal studs, one in each wall cavity, erected vertically, fastened securely to floor and ceiling runners, and attached to each other through one base and/or one face layer with USG Drywall Screws Type S.

door frames

Floor to ceiling height metal studs shall be inserted into each side of the steel door frame to act as a strut-stud. Attach strut-studs to floor and ceiling runners with the USG Metal Lock Fastener and to each adjacent jamb anchor clip with two ⅜″ USG Drywall Screws Type S-12, pan head. Over the metal door install a cut-to-length section of runner with flanges slit and web bent to allow flanges to overlap and attach to adjacent strut-studs. A cut-to-length stud extending from the doorhead runner to the ceiling runner shall be centered between strut-studs and securely fastened to runners.

wallboard accessories

a. PERF-A-TAPE or DURABOND Joint System shall be used on all face board joints and internal angles formed by the intersections of walls and ceilings.

b. Laminating Adhesive shall be PERF-A-TAPE Joint Compound (embedding type) mixed according to manufacturer's directions or USG Laminating Adhesive spread to provide adhesive beads ⅝″ high x ½″ wide at the base and spaced 2″ o.c. and 1″ away from each edge of the gypsum ribs. For face layer lamination only, adhesive beads shall be ½″ high x 5/16″ wide at the base and spaced 4½″ o.c.

c. Metal Corner Bead No. (000000) shall be securely installed at all external corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. At least two coats of joint compound shall be applied over beads and each coat feathered out onto panel faces.

d. Metal Trim No. (000000) shall be securely installed where indicated. Finish with PERF-A-TAPE Joint Compound, as required.

e. Fasteners shall be as shown on drawings or as herein specified. Fasteners shall be driven not less than ⅜″ from ends or edges of wallboard to provide uniform dimple not over 1/32″ deep. Spot exposed fastener dimples on face layers with at least three coats of joint compound, feathered and sanded smooth.

f. Control Joints shall be provided in the face layer as indicated and shall consist of two pieces of metal trim back-to-back located over a stud.

UNITED STATES GYPSUM

partitions **a**

USG® Double Solid Gypsum Drywall

1076

A.I.A. File No. 20-B-2.1

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
2 hrs.	Double Solid Drywall—½" SHEETROCK gypsum wallbd—two rows of 1" USG gypsum corebd spaced 1⅛" apart—stl runners—wallbd lamin & screw att ea face—joints fin wt 13 width 4⅛"	T-1310-OSU (f) USG-13-FT-G&H (s)	46		150	Excellent, versatile—best value in 45-49 stc range	a-1076
2 hrs. est	Double Solid Drywall—½" SHEETROCK gypsum wallbd lamin ea face to two rows of 1" USG gypsum corebd spaced 3" apart—1½" THERMAFIBER sound atten blkts stapled to back of one row—stl runners—joints fin wt 13 width 6"	USG-96-FT-G&H (s) Field Test KSO-109006-c (s)	60 56		165	Outstanding sound isolation at low cost	a-1076

description

In this non-load bearing partition assembly SHEETROCK* Gypsum Wallboard face layers are job-laminated to the outer sides of two parallel rows of USG Gypsum Coreboard, spaced a specified distance apart. The Coreboard, a 1" thick fireproof gypsum core encased in strong gray liner paper on both sides and long edges, is 24" wide and mill-fabricated to standard lengths. Integrally formed "V" T&G edges facilitate accurate alignment of the coreboard during erection to metal floor and ceiling runners.

The partition when completed with the PERF-A-TAPE* Joint System and DUR-A-BEAD* Corner Reinforcement is recommended for party walls where 46 sound transmission class or greater is a design requirement; where greater core widths are needed for plumbing enclosures and other mechanical installations; and where building codes call for fire resistance up to 2 hours.

SHEETROCK for this assembly is ½" thick, 48" wide with tapered edges (see Specifications, page 6).

A non-hardening, non-skinning caulking compound was used to obtain the sound ratings shown above.

function and utility

Fire Resistance—Constructed of incombustible components (except when wood runners are used), the system has obtained fire endurance and hose stream ratings of 2 hours.

Sound Transmission—With a double row 1" "V" T&G Gypsum Coreboards 1⅛" apart; ½" SHEETROCK face layers both sides; the partition has a 46 sound transmission class. Where a 56 to 60 sound transmission class is needed, coreboards are spaced 3" apart and 1½" THERMAFIBER* Sound Attenuation Blankets are attached to the backside of one coreboard row.

sound attenuation factors

test no.	method	decibel frequency in cps 125	175	250	350	500	700	1000	1400	2000	2800	4000	STC
USG-13-FT-G&H	Two Room	30	30	35	40	43	48	49	50	50	57	56	46
KSO-109006-c	Field	34	42	46	50	52	55	60	61	63	63	70	56
USG-96-FT-G&H	Two Room	41	46	52	54	56	58	60	62	61	65	66	60

Versatility—Adaptable for use as party walls in apartments, office buildings, schools, motels, dormitories, etc.; for pipe chase enclosures in virtually all types of building construction. Satisfies most design and job conditions. Component materials readily adapt to most modules or dimensions.

Light Weight—The completed partition weighs approximately 13 lbs. per sq. ft.—appreciably less than masonry partitions of the same thickness.

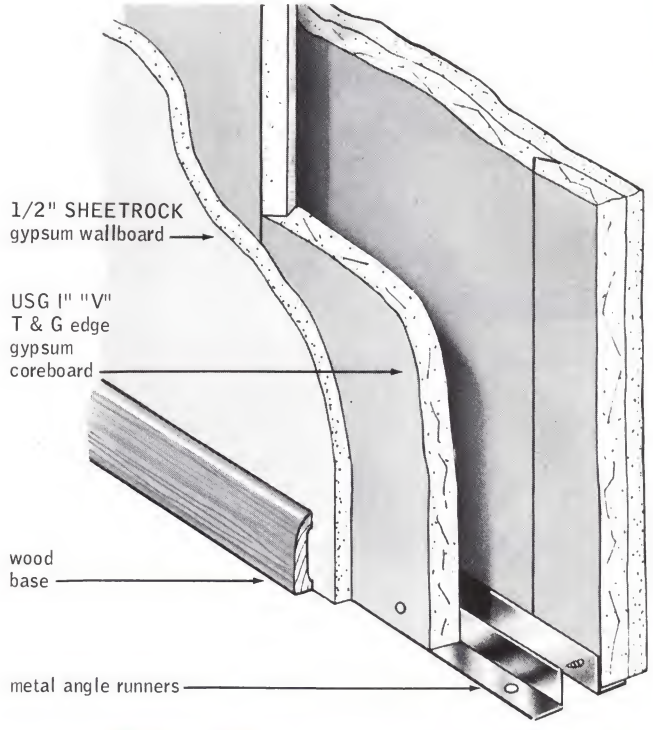
Economy—Low cost and simple component materials, speed of erection, ease and flexibility in providing for mechanical installations result in extremely favorable cost factors. The low weight of the partition may result in structural design savings.

limitations

1. Non-load bearing.
2. Allowable maximum height:

width between restraint	max. ceiling height
Up to 10′	10′
10′ to 14′	9′
Over 14′	8′

3. Partition should not be used where exposed to abnormal moisture or excessively high humidity or temperature.

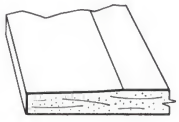


A.I.A. File No. 20-B-2.1

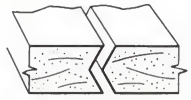
*Reg. U.S. Pat. Off.

components

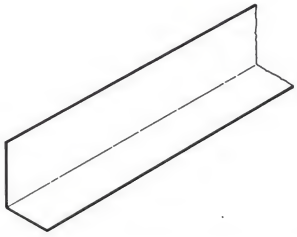
see "gypsum wallboard and joint treatment" product catalogs for full description on accessories & sizes



tapered edge SHEETROCK gypsum wallboard



1" "V" edged T & G coreboard



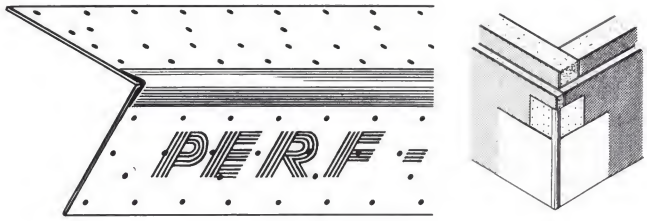
1 3/8"x7/8"—22 ga. metal angle runner

1¼" USG drywall screw—type S—bugle head

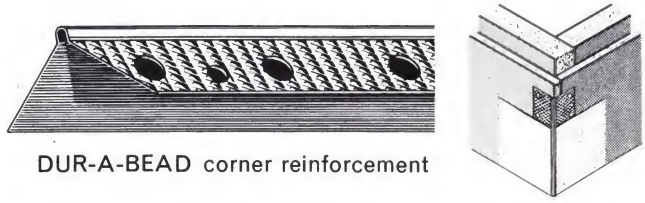
2¼" USG drywall screw—type S—trim head

1 ½" USG drywall screw—type G—bugle head

1⅝" USG drywall screw—type S—bugle head



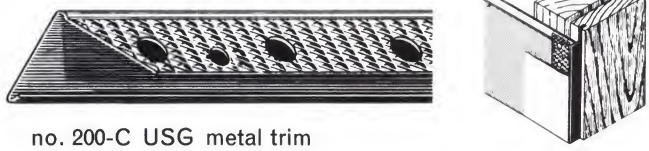
no. 100 PERF-A-BEAD



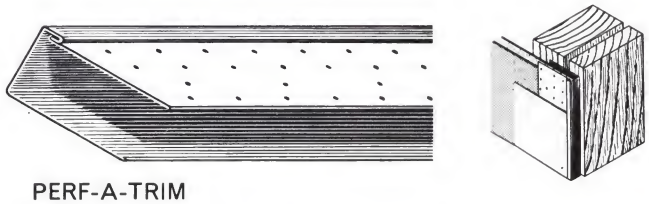
DUR-A-BEAD corner reinforcement

USG metal trim

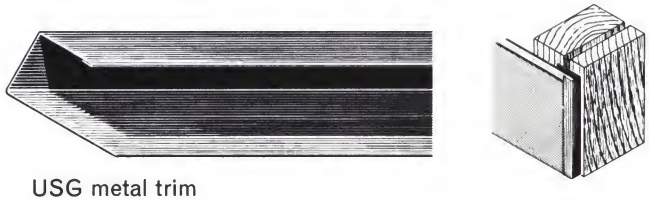
no. 200-B USG metal trim



no. 200-C USG metal trim



PERF-A-TRIM

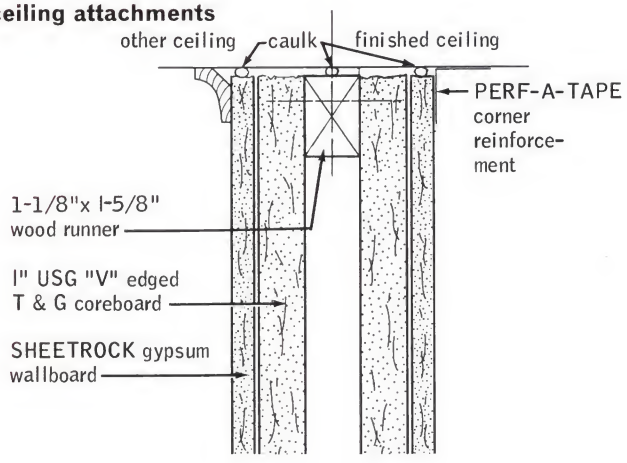


USG metal trim

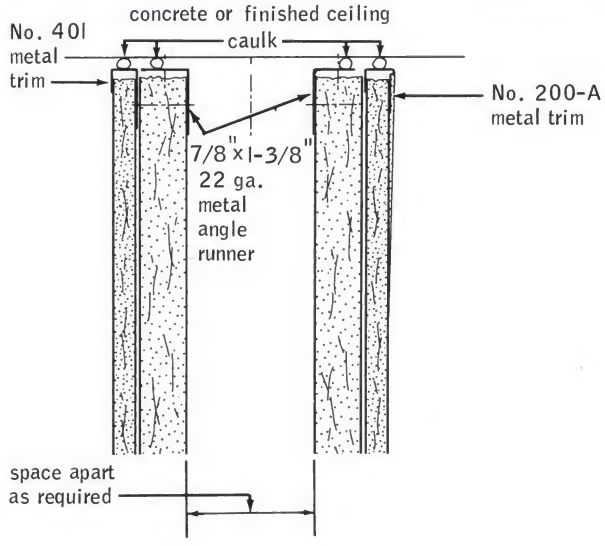
details

scale: 3″ = 1′-0″

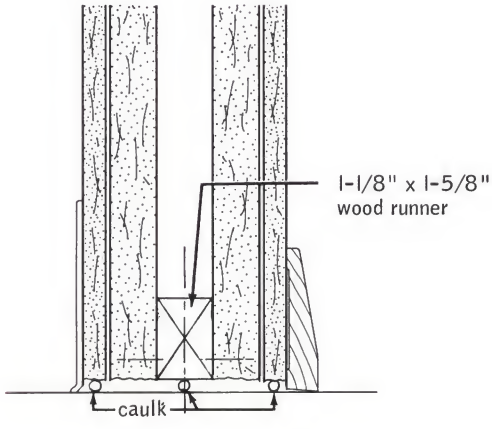
ceiling attachments



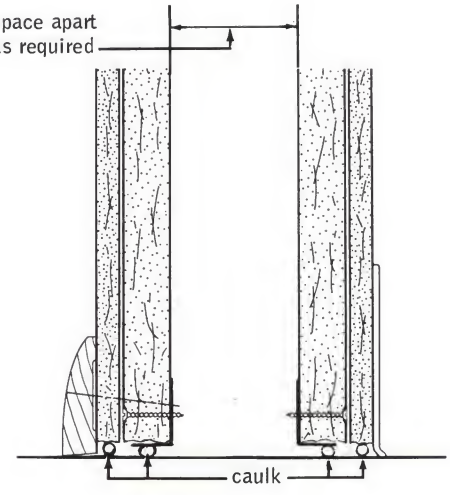
scale: 3″ = 1′-0″



floor attachments & bases

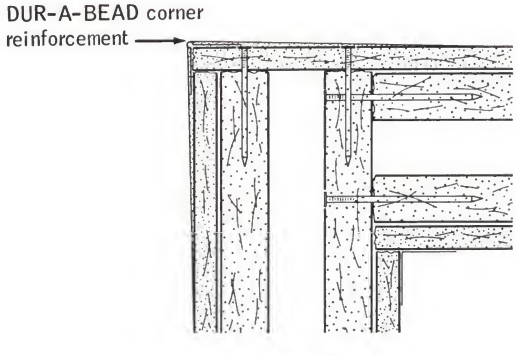


top set wood

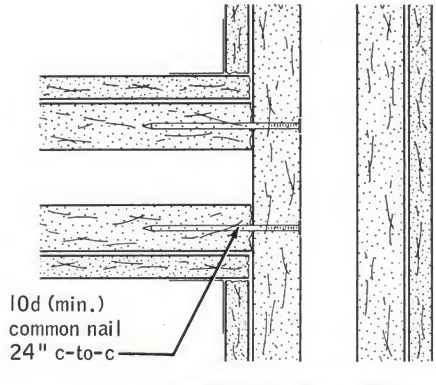


wood top set

intersecting walls



corner

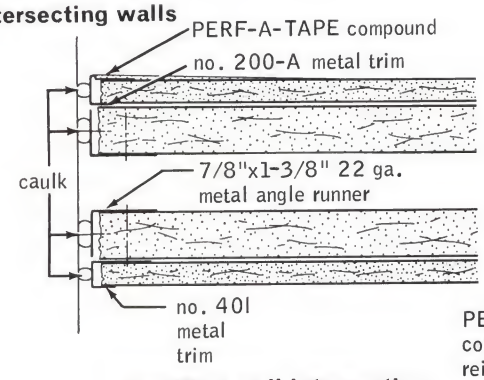


partition intersection

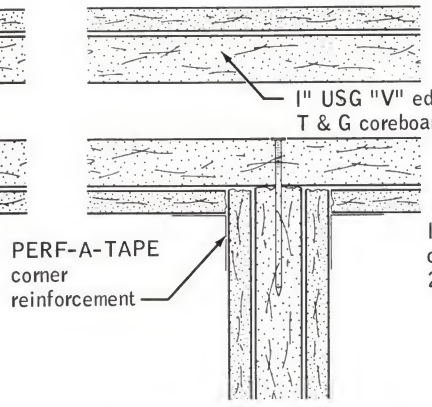
details

scale: 3″ = 1′-0″

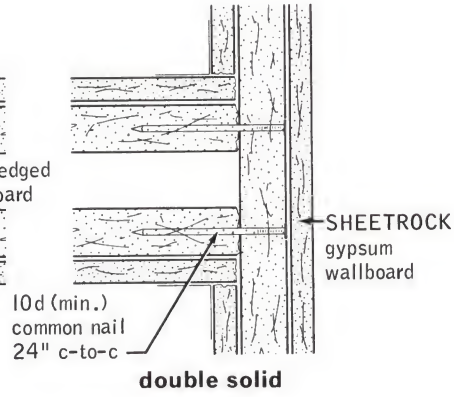
intersecting walls



partition wall intersection

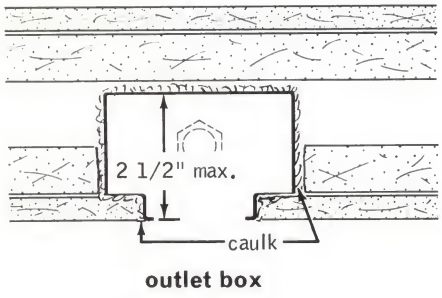


double solid & 2″ solid

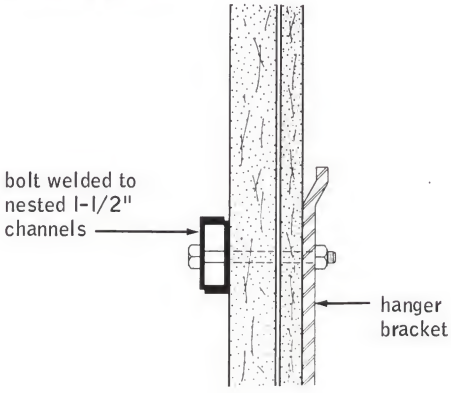


double solid

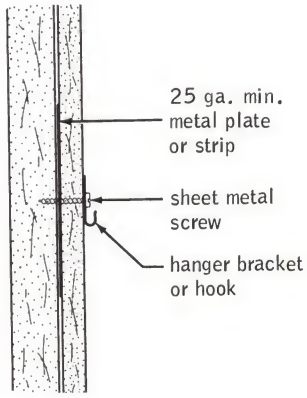
fixture attachments



outlet box

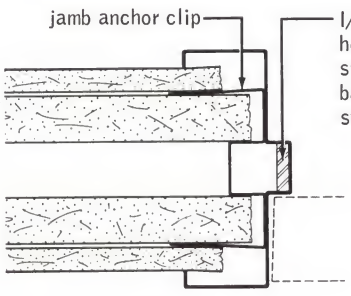


heavy

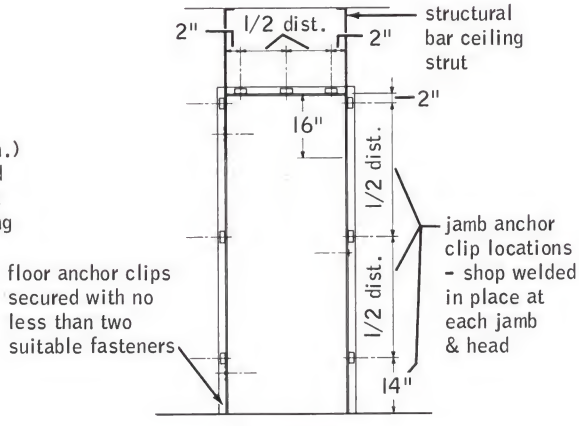


light

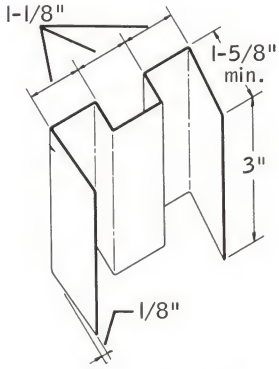
metal door frame



jamb



elevation
cross section thru frame

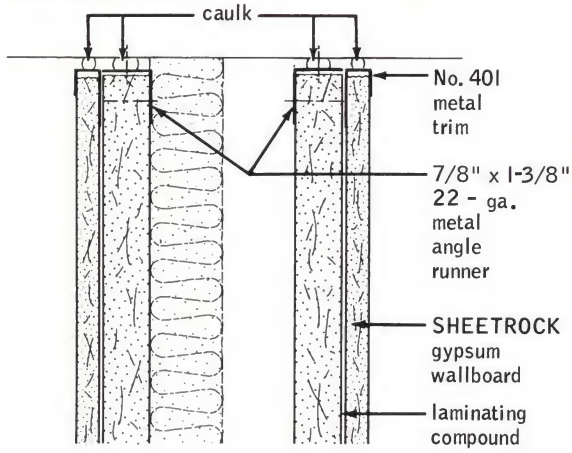


jamb anchor clip

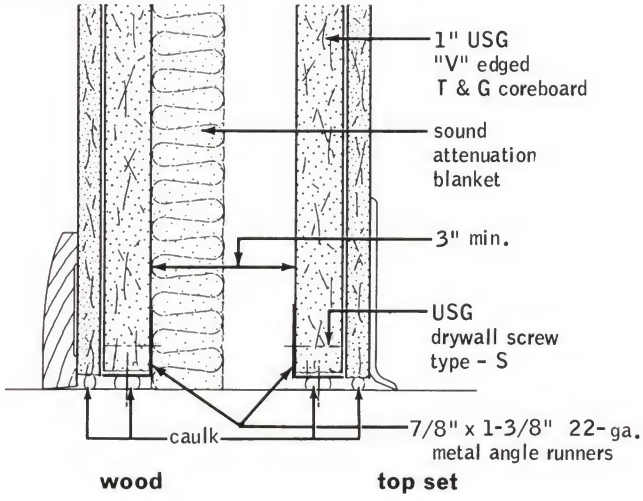
details

scale: 3″ = 1′-0″

ceiling attachment

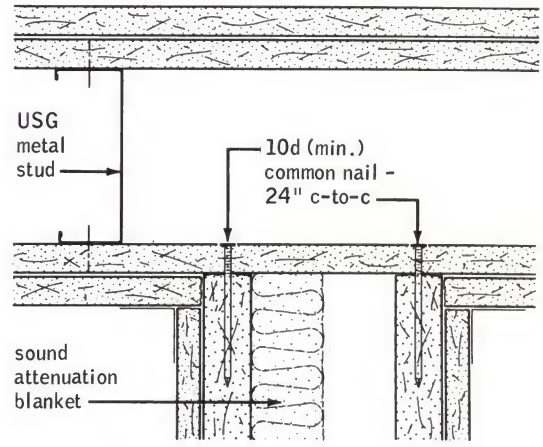


floor attachment

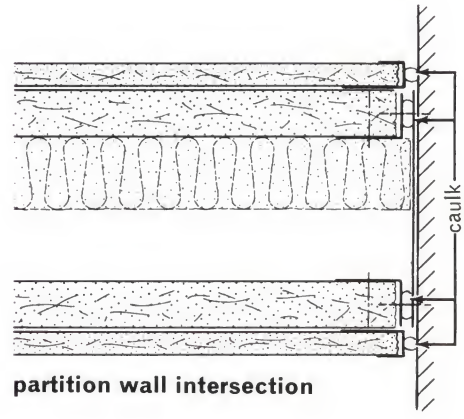


wood **top set**

intersecting walls



partition intersection



partition wall intersection

specifications

notes to architect

1. *Where this partition is used as a sound barrier, the integrity of the partition should not be voided by doors and borrowed lights. Metal door and borrowed light frames if required should be formed from 18-ga. steel minimum, shop primed. The opening between the trim returns should be accurately formed to the overall thickness of the partition.*

Floor anchor plates should be 14-ga. steel minimum, designed with two anchor holes to prevent rotation and welded to trim flanges to dampen door impact vibrations. Floor anchorage should be by two power-driven anchors or equivalent per plate. Jamb anchor clips should be formed of 18-ga. steel minimum, and welded in the jamb and head. (*See details page 4.*)

Door frame struts should be 1″ x ¼″ hot rolled steel bar stock and should extend from a minimum of 16″ below head of frame in each jamb to the ceiling.

All metal door and borrowed light frames should be spot grouted at the location of jamb anchor clips, after coreboard is installed. The grout should be raked out to allow the wallboard to be inserted into the frame. Under no conditions should the wallboard terminate against the trim return of the door frame.

Door closers and bumpers are required on all doors where the weight of the door (including attached hardware) exceeds 50 lbs.

2. *Non-load bearing drywall partitions will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that wallboard surfaces be isolated from all structural elements by control joints or other means where:*

- **a.** *A partition abuts any structural element or dissimilar wall or ceiling assembly.*
- **b.** *The partition construction changes within the plane of the partition.*

In long partition runs, control joints should be provided no more than 30′ o.c. Door frames extending from floor to ceiling are recommended as control joints. For doors less than ceiling height, control joints extending from both corners of the frame to the ceiling may be used.

3. *Holes cut in a thin wallboard membrane such as door frames, borrowed lights, etc., cause a concentration of stresses in the wallboard typically at intersection of head and jamb. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

4. Electrical Fixtures—*The depth of electrical boxes should not exceed 2½″.*

5. Ceramic Tile—*SHEETROCK W/R Gypsum Wallboard is recommended as a base for the adhesive application of ceramic, metal and plastic tile.*

6. *Where this partition is used as a sound barrier, the use of caulking to seal all cut-outs, such as at electrical fixtures and to seal all intersections with the adjoining structure is recommended. Eliminate cutting holes back to back and adjacent to each other.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

general conditions

In cold weather and during the period of wallboard application and joint finishing, temperatures within the building shall be maintained uniformly within the range of 55° to 70°F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

materials

See USG product folders in this series:

Joint Treatment Folder for PERF-A-TAPE Joint System Specifications.

Gypsum Wallboard Folder for information on Wallboard System Components.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

- **a.** Coreboard—1″ thick, 24″ wide, USG "V" T&G edge Gypsum Coreboard, lengths as required.
- **b.** Faceboards—(½″) (⅝″) thick, 48″ wide, Tapered Edge SHEETROCK Wallboard lengths as required.
- **c.** Laminating Adhesive—PERF-A-TAPE Joint Compound (embedding type) or USG Laminating Adhesive.
- **d.** Joint Treatment—PERF-A-TAPE or DURABOND* Joint System.
- **e.** Fasteners—(specify type from page 2).
- **f.** USG Metal Trim (specify type from page 2).
- **g.** USG Corner Bead—DUR-A-BEAD, PERF-A-BEAD* (specify type from page 2).
- **h.** Metal Angle Runners—1⅜″ x ⅞″ x 22 ga.
- **i.** Insulation—1½″ THERMAFIBER Sound Attenuation Blankets, 24″ x 48″.
- **j.** Caulking—Presstite 579.64 Mastic as manufactured by Presstite Division Interchemical Corporation or equal.

*Reg. U.S. Pat. Off.

erection and lamination

All partitions shall be aligned accurately according to the partition layout.

Floor and ceiling runners shall be shaped as detailed in the drawings, spaced to provide a minimum of (1⅛″) (3″) space between 1″ coreboards and securely attached to floor and ceiling constructions with suitable fasteners spaced 24″ o.c.

Cut coreboard to fit accurately between floor and ceiling runners and install vertically with tongue edge leading.

Begin installing coreboard at the door frame by engaging the vertical edge in the jamb anchor clips in each jamb. Place cut-to-fit coreboard over metal frame header by engaging bottom edge in anchor clips and attaching to ceiling runners with 1¼″ USG Drywall Screws—Type S spaced 24″ o.c. Erect succeeding panels by fastening coreboard to vertical flanges of both floor and ceiling runners with 1¼″ USG Drywall Screws —Type S spaced 24″ o.c.

At partition intersections, coreboards shall be nailed together with 10d nails spaced 24″ o.c. Panels shall be inserted in jamb anchor clips at all door frames, borrowed light frames and partition terminals and spot grouted at the clip locations.

Face boards shall be cut to ½″ less than floor-to-ceiling height. Apply laminating adhesive and laminate in place to coreboards using moderate pressure to insure adequate bond. Install face boards ¼″ with space at top and bottom and at vertical intersections with terminal walls. Offset face panel joints at least 3″ from coreboard joints. Screw face layer to coreboard with USG 1½″ Type G Screws. Screws along vertical edges shall occur 36″ o.c. maximum, within 2″ of joint and 12″ of both ends. Screws in field shall occur 48″ o.c. maximum and within 24″ of both ends.

Coreboards and face boards shall be cut neatly to fit around all outlets and switch boxes. Suitable fastener anchorage shall be provided as required for the attachment of shelves and cabinets.

Work done by this contractor shall be coordinated properly with that to be done by other trades.

wallboard accessories

a. PERF-A-TAPE or DURABOND Joint System shall be used on all face board joints and internal angles formed by the intersections of walls and ceilings.

b. Laminating Adhesive shall be USG PERF-A-TAPE Joint Compound (embedding type) mixed according to manufacturer's directions or USG Laminating Adhesive applied in strips, 2′ o.c., running continuously from floor to ceiling. Each strip shall consist of four beads ½″ high and ⅜″ wide at the base and spaced 1½″ to 2″ o.c.

c. Metal Corner Bead No. (000000) shall be securely installed at all external corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. At least two coats of joint compound shall be applied over beads and each coat feathered out onto panel faces.

d. Metal Trim No. (000000) shall be securely installed where indicated. Finish with PERF-A-TAPE Joint Compound, as required.

e. Fasteners shall be as shown on drawings or as herein specified. Fasteners shall be driven not less than ⅜″ from ends or edges of wallboard to provide uniform dimple not over 1/32″ deep. Spot exposed fastener dimples on face layers with at least three coats of joint compound, feathered and sanded smooth.

f. Control Joints shall be provided in the face layer as indicated and shall consist of two pieces of Metal Trim back-to-back.

UNITED STATES GYPSUM

partitions

a

USG® Triple Solid Gypsum Drywall

1086

A.I.A. File No. 20-B-2.1

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
2 hrs. est	Triple Solid Drywall—½" SHEETROCK gypsum wallbd—3 rows of 1" USG gypsum corebd ea spaced min 1⅛" & 1½" apart—1½" THERMAFIBER sound atten blkts att to back of one outer row—wallbd lamin & screw att to outer rows—joints fin wt 17 width 6¼"	USG-94-FT-G&H (s)	59		210	Septum improves resistance against sound leaks on job	a-1086
2 hrs. est	Triple Solid Drywall—½" SHEETROCK gypsum wallbd—3 rows of 1" USG gypsum corebd ea spaced 1⅛" apart—wallbd lamin & screw att to outer rows—joints fin wt 18 width 6¼"	USG-95-FT-G&H (s)	53		195	Among best lamin. drywall party walls in 50-54 stc range	a-1086

description

This incombustible non-load bearing partition assembly consists of three separate rows of USG Gypsum coreboards, spaced a minimum of 1⅛" apart, and ½"x4' wide SHEETROCK* Gypsum Wallboard face layers, laminated to the outer coreboard rows. The center coreboard row serves as a "septum" or uncut barrier to prevent sound from leaking through openings cut in the partition faces for electrical or plumbing fixtures, medicine cabinets, etc. Electrical conduit and boxes may be installed in the space on either side of the septum. By increasing the space between the coreboard rows, greater core widths may be obtained for light mechanical equipment without destroying the outstanding sound control properties of this assembly.

USG Coreboard, a 1" thick fireproof gypsum core encased in strong gray liner paper on both sides and long edges, is 24" wide and mill-fabricated to standard lengths. Integrally formed "V" T&G edges engage tightly to resist sound transmission and facilitate accurate vertical alignment of the coreboard during screw attachment to 1⅜"x⅞"x22 ga. metal angle runners at the floor and ceiling. SHEETROCK face layers, erected vertically with staggered joints, are laminated and screw attached to outer coreboards with specially designed power-driven USG Drywall Screws. A resilient non-hardening caulking compound is used between the metal floor and ceiling runners and the basic construction and around the perimeter of the partition.

The partition when completed with the PERF-A-TAPE* Joint System and caulked is recommended for party walls where 50 sound transmission class or greater is a design requirement; where greater core widths are needed for plumbing chases and mechanical installations; and where building codes call for fire resistance up to 2 hours.

function and utility

Sound Control—The basic partition has a 53 sound transmission class. With the addition of THERMAFIBER* Sound Attenuation Blankets in one cavity the class is increased to 59. Job tests confirm the superiority of this system over other traditional masonry or resilient clip systems in providing efficient sound control on the job.

sound attenuation factors

test no.	method	decibel frequency in cps 125	175	250	350	500	700	1000	1400	2000	2800	4000	STC
USG-94-FT-G&H	Two Room	39	43	53	53	58	58	62	65	62	66	66	59
USG-95-FT-G&H	Two Room	34	35	43	49	54	56	60	61	61	66	66	53

Fire Resistance—Constructed of incombustible components; a 2-hour fire resistance has been estimated for this assembly.

Versatility—Adaptable for use as a dividing partition between units in apartments, office buildings, schools, motels, dormitories or any type of building construction where excellent sound control and pipe chase enclosures are design requirements. Component materials readily adapt to building modules or dimensions.

Light Weight—The completed partition weighs 17 lbs. per sq. ft.—appreciably less than masonry partitions with comparable resistance to sound transmission.

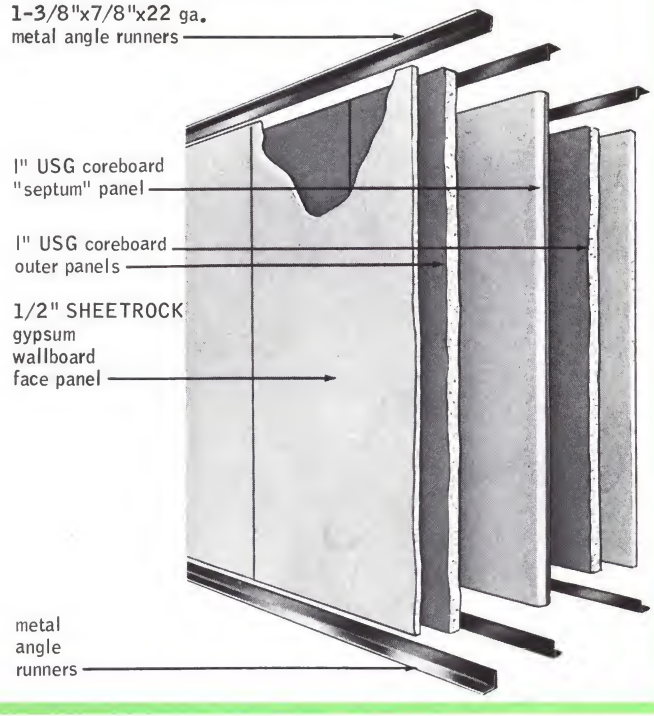
Economy—Low cost, simple components; easy installation; and the ease and flexibility in providing for electrical and light mechanical installations result in extremely favorable cost factors for this high degree of sound control. The weight of this partition may provide savings in structural framing.

limitations

1. Non-load bearing.
2. Allowable maximum height:

width between restraint	max. ceiling height
Up to 10′	10′
10′ to 14′	9′
Over 14′	8′

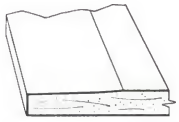
3. Partition should not be used where exposed to abnormal moisture or excessively high humidity or temperature.



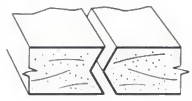
A.I.A. File No. 20-B-2.1

*Reg. U.S. Pat. Off.

components

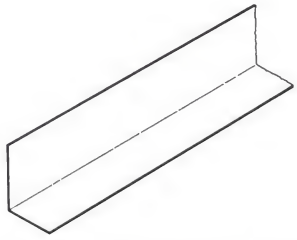


tapered edge SHEETROCK gypsum wallboard

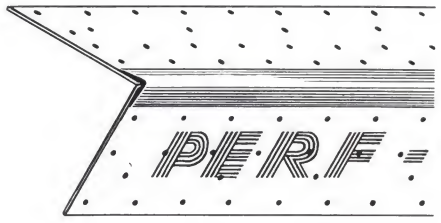


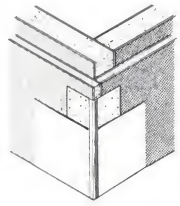
1" "V" edged T & G coreboard

see "gypsum wallboard and joint treatment" product catalogs for full description on accessories & sizes

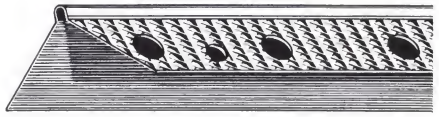


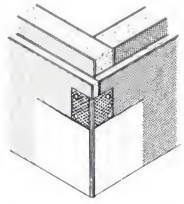
1 3/8"x7/8"—22 ga. metal angle runner



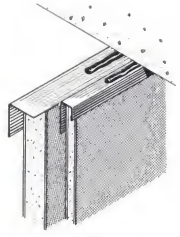


no. 100 PERF-A-BEAD



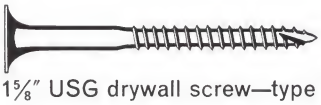


DUR-A-BEAD corner reinforcement



USG metal trim

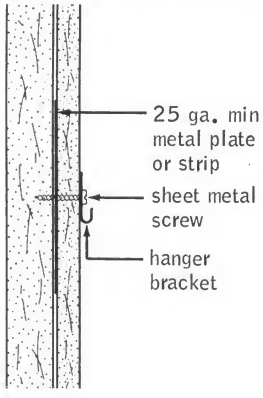
1¼" USG drywall screw—type S—bugle head



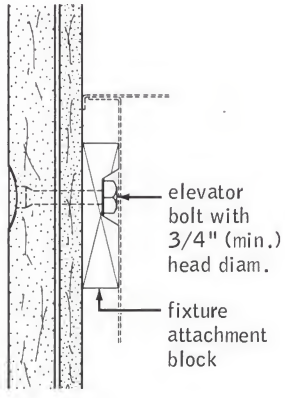
1⅝" USG drywall screw—type S—bugle head

1 ½" USG drywall screw—type G—bugle head

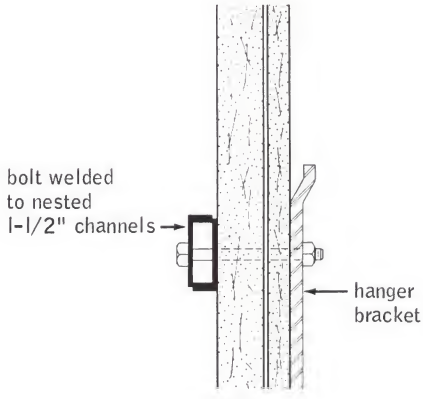
fixture attachments



light



medium



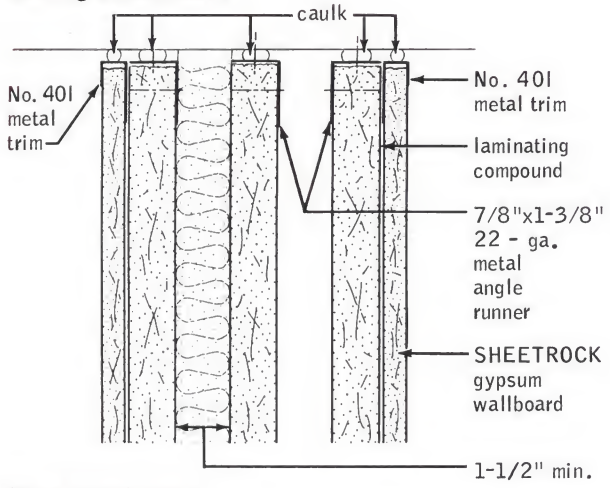
heavy

*Reg. U.S. Pat. Off.

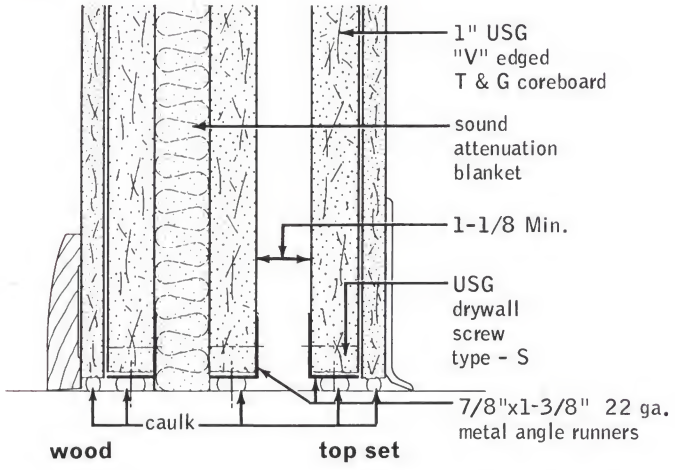
details

scale: 3″ = 1′-0″

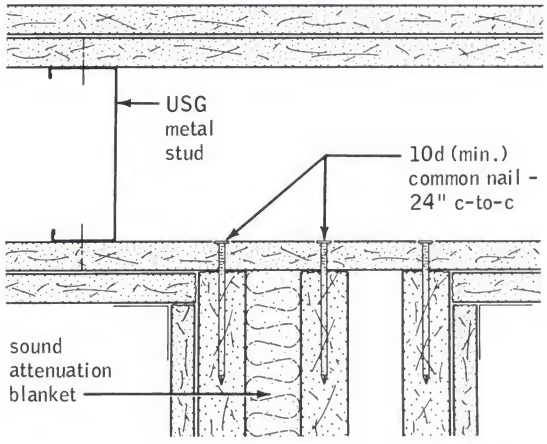
ceiling attachment



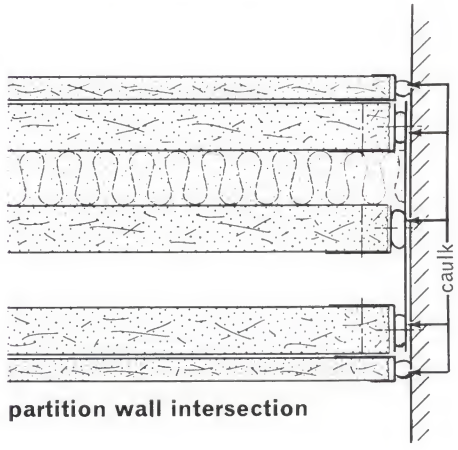
floor attachment



intersecting walls



partition intersection



partition wall intersection

specifications— notes to architect

1. *Door and borrowed light openings are not recommended when this partition is used as a party wall, since the sound control characteristics will be reduced. If required, details for door and borrowed light frames may be found in USG Double Solid Drywall Systems Folder.*

2. *Non-load bearing drywall partitions will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that wallboard surfaces be isolated from all structural elements where:*

- **a.** *A partition abuts any structural element or ceiling assembly.*
- **b.** *The partition construction changes within the plane of the partition.*

In long partition runs, control joints should be provided in the face layer at intervals no greater than 30′ o.c.

3. *Holes cut in thin wallboard membrane such as electrical outlets, plumbing fixtures, etc., cause a concentration of stresses in the wallboard typically at intersection of head and jamb. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not specified.*

4. *Ceramic Tile—SHEETROCK W|R Gypsum Wallboard is recommended as a base for the adhesive application of ceramic, metal and plastic tile.*

5. *Where this partition is used as a sound barrier, the integrity of the septum should not be destroyed by cutting holes. The use of caulking is recommended to seal all openings in the face layers, such as at the electrical fixtures, and to seal all intersections with the adjoining structure. Eliminate cutting holes back to back and adjacent to each other.*

6. *The addition of 1½″x24″x48″ THERMAFIBER Sound Attenuation Blankets to one cavity, pressed in place, stapled to the back side of one face of the septum, will increase the sound transmission loss of the partition.*

7. *Fixture Attachment—Lightweight fixtures and trim should be installed using plastic plugs or other expandable anchors for screw attachment. Medium and heavy weight fixtures should be supported by elevator bolts with ¾″ (min.) head diameter or bolts welded to nested 1½″ channels. Care should be taken so fixture attachments do not contact septum sound barrier.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

general conditions

In cold weather and during the period of wallboard application and joint finishing, temperatures within the building shall be maintained uniformly within the range of 55° to 70° F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles, stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

materials

See USG product folders in this series:

Joint Treatment Folder for PERF-A-TAPE Joint System specifications.

Gypsum Wallboard Folder for information on Wallboard System Components.

Paint Products Folder for Paint specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. Coreboard—1″ thick, 24″ wide, USG "V" T&G edge Gypsum Coreboard, lengths as required.

b. Faceboards—½″ thick, 48″ wide, Tapered Edge SHEETROCK Wallboard, lengths as required.

c. Laminating Adhesive—PERF-A-TAPE Joint Compound (embedding type) or USG Laminating Adhesive.

d. Joint Treatment—PERF-A-TAPE or DURABOND* Joint System.

e. Fasteners—(specify type from page 2).

f. USG Metal Trim—(specify type from page 2).

g. Metal Angle Runners—1⅜″x⅞″x22 ga.

h. Insulation—THERMAFIBER Sound Attenuation Blankets 1½″ x24″x48″.

i. Caulking—Presstite 579.64 Mastic as manufactured by Presstite Division of Interchemical Corporation or equal.

erection and lamination

All partitions shall be aligned accurately according to the partition layout.

Floor and ceiling runners shall be 1⅜″x⅞″x22 ga. metal angles, spaced to provide a minimum of 1⅛″ space between 1″ coreboards, caulked prior to attachment to basic construction with a resilient non-hardening caulking compound and securely attached to floor and ceiling constructions with suitable fasteners spaced 24″ o.c.

Cut coreboard to fit accurately between floor and ceiling runners and install vertically with tongue edge leading. Fasten coreboard to vertical flanges of both floor and ceiling runners with 1¼″ USG Drywall Screws Type S spaced 24″ o.c.

Coreboard in septum row shall have tongue facing in opposite direction from tongues in outer coreboard rows with vertical joints staggered from joints in outer coreboard rows.

At partition intersections, coreboards shall be nailed together with 10d nails spaced 24″ o.c.

Face boards shall be cut to ½″ less than full floor-to-ceiling height. Apply laminating adhesive and laminate in place to coreboards using moderate pressure to insure adequate bond. Install face boards with ¼″ space at top and bottom and at vertical intersections with terminal walls. Offset face panel joints at least 3″ from coreboard joints. Screw face layer to coreboard with USG 1½″ Type G Screws. Screws along vertical edges shall occur 36″ o.c. maximum, within 2″ of joint and 12″ of both ends. Screws in field shall occur 48″ o.c. maximum and within 24″ of both ends.

Coreboards and face boards shall be cut neatly to fit around all outlets and switch boxes. Provide suitable fastener anchorage for the attachment of shelves and cabinets.

Caulk septum core at vertical intersections with terminal walls and around the perimeter of all face layers, outlets, switch boxes, pipes, plumbing fixtures and other holes cut in the face layers with a resilient non-hardening caulking compound.

Work done by this contractor shall be coordinated properly with that to be done by other trades.

wallboard accessories

a. PERF-A-TAPE or DURABOND Joint System shall be used on all face board joints and internal angles formed by the intersections of walls and ceilings.

b. Laminating Adhesive shall be PERF-A-TAPE Joint Compound (embedding type) mixed according to manufacturer's directions or USG Laminating Adhesive applied in strips, 2′ o.c., running continuously from floor to ceiling. Each strip shall consist of four beads ½″ high and ⅜″ wide at the base and spaced 1½″ to 2″ o.c.

c. Metal Trim No. (000000) shall be securely installed where indicated. Finish with PERF-A-TAPE Joint Compound, as required.

d. Fasteners shall be as shown on drawings or as herein specified. Fasteners shall be driven not less than ⅜″ from ends or edges of wallboard to provide uniform dimple not over 1/32″ deep. Spot exposed fastener dimples on face layers with at least three coats of joint compound, feathered and sanded smooth.

e. Control Joints shall be provided in the face layer as indicated and shall consist of two pieces of Metal Trim back-to-back.

UNITED STATES GYPSUM

steel studs or solid gypsum

partitions **a**

IMPERIAL* Plaster Systems

THIN/COAT

1146

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
2 hrs.	Met Stud—2 layers ⅝″ IMPERIAL plaster base Type X & thin coat plaster—3⅝″ USG met studs 24″ o.c.—base layer screw att—face layer lamin—joints taped —1/16″ IMPERIAL plaster fin wt 22 width 6⅝″	UL Des 11-2 hr (f)	N/A		165	Excellent for corridors; sound performance based on perimeter caulking	a-1146
2 hrs. est	Met Stud—2 layers ½″ IMPERIAL plaster base & thin coat plaster—2½″ USG met studs 24″ o.c.—run track gasketed & caulked—base layer screw att—face layer strip lamin 24″ o.c. & att with Type G screws betw studs—2″ THERMAFIBER sound atten blkts att one side—1/16″ IMPERIAL plaster fin—perimeter caulked wt 10 width 4⅝″	USG-127-FT-G&H (s) Field Test KSO-1090072-a (s)	52 48		177		a-1146
2 hrs. est	Solid Gypsum—⅜″ IMPERIAL plaster base & thin coat plaster—pl base lamin ea face to 1″ USG gypsum corebd—met angle runners at flr & clg—joints stag & taped—1/16″ IMPERIAL plaster fin wt 10 width 2½″	TL-63-208 (s)	34		135		a-1146
2 hrs. est	Double Solid Gypsum—½″ IMPERIAL plaster base & thin coat plaster—pl base strip lamin & att with Type G screws to 1″ USG gypsum corebd—met angle runners at flr & clg 3″ apart—2″ THERMAFIBER sound atten blkts stapled to corebd one side—1/16″ IMPERIAL plaster fin—joints fin—perimeter caulked wt 13 width 6⅝″	Field Test KSO-1090072-d (s)	54		178		a-1146
1 hr.	Met Stud—1 layer ½″ IMPERIAL plaster base Type X & thin coat plaster—2½″ USG met studs 24″ o.c.—pl base att with 1″ Type S screws—joints taped—1/16″ IMPERIAL plaster fin wt 6 width 3⅝″	T-3124-OSU (f) TL-63-175 (s)	38		112		a-1146
ceiling application							
2 hrs.	½″ IMPERIAL gypsum pl base Type X & thin coat plaster ceiling—USG met fur chan 24″ o.c.—pl base att with screws 12″ o.c.—joints taped—1/16″ IMPERIAL plaster fin entire surface clg wt 4	UL Des 221-2 hr (f)	N/A		clg matls 55		a-1146

description

In the IMPERIAL Plaster Systems a thin veneer (1/16″ to 3/32″ thick) of specially formulated, high-strength gypsum plaster is applied over IMPERIAL Plaster Base. Either IMPERIAL Plaster Finish is applied in a single-coat system, or IMPERIAL Plaster Basecoat is used in a two-coat application as a superior base for DIAMOND* Finish, STRUCTO-GAUGE* Gauging Plaster and lime, or Keene's-lime-sand-float finish.

IMPERIAL Plaster Base, 4′ wide, has a high-strength, high-density core, either regular or Type X fire-rated, covered with special absorption face paper designed for thin-coat plastering. Versatile IMPERIAL Base, as outlined below, is used with metal or wood studs, metal furring channels or in laminated gypsum construction to meet design requirements for interior partitions, party walls, chase walls and furring.

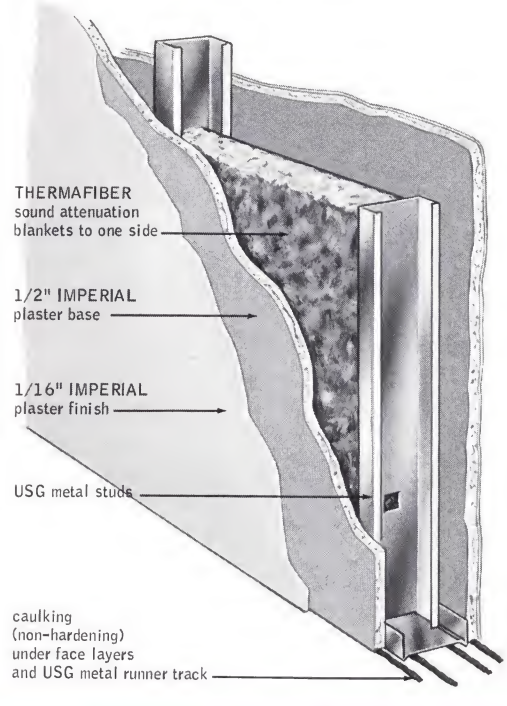
1. USG® Metal Studs, available in 3 widths (see Specifications, page 6), set in metal runners, with 1-layer, ½″ thick IMPERIAL Base, Type X core, screw-attached to 2½″ studs 16″ o.c., this partition has a 1-hour fire rating and suited for interior partitions and corridor walls. With double layer ⅝″ IMPERIAL Base, Type X, attached by means of Type S screws to 3⅝″ studs spaced 16″ o.c., a 2-hour fire rating plus sound control suitable for party walls is available. Where added partition width is required, double rows of USG No. 158 studs, 24″ o.c. are erected to provide chase walls with up to 8¾″ net pipe chase width (see page 4).

2. Metal Furring Channel—With Insulating (foil-back) IMPERIAL Plaster Base screwed to USG Furring Channels erected 16″ o.c. direct to masonry or furred with brackets and ¾″ channels, this construction provides an excellent vapor barrier and offers significant insulating value as exterior wall furring (see details, page 4).

3. Laminated Gypsum—Economical, space saving, 2-hour (estimated) 2½″ solid partitions, suitable for interior dividers, are built with ⅝″ IMPERIAL Type X Base job-laminated to both sides of 1″ USG Coreboard secured in metal floor and ceiling runners.

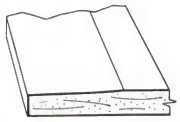
With ½″ IMPERIAL Plaster Base job-laminated to the outside of two coreboard rows, set in angle runners spaced 1⅛″ apart, a double solid partition offers estimated 2-hour fire resistance.

(*continued on page 6*)

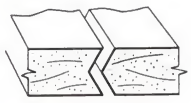


*Reg. U.S. Pat. Off.

components/details



½", or ⅝"
IMPERIAL plaster base



USG coreboard

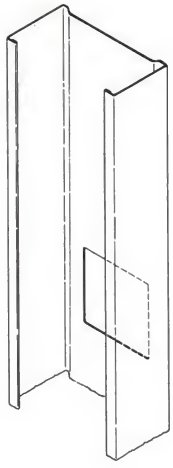
see "plaster bases" product catalog for full description on accessories & sizes

1" USG drywall screw—type S—bugle head

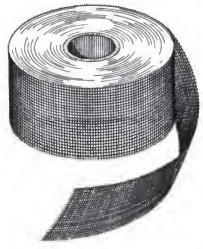
1⅝" USG drywall screw—type S—bugle head

2¼" USG drywall screw—type S—trim head

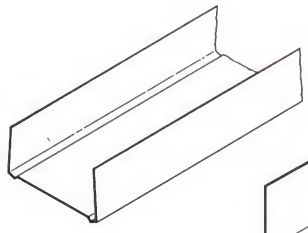
1½" USG drywall screw—type G—bugle head



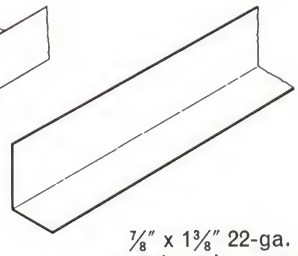
USG metal stud



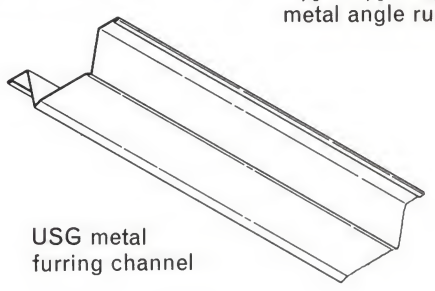
IMPERIAL joint reinforcement tape



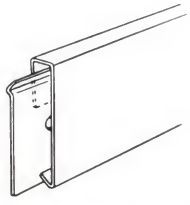
USG metal runner



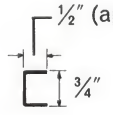
⅞" x 1⅜" 22-ga. metal angle runner



USG metal furring channel



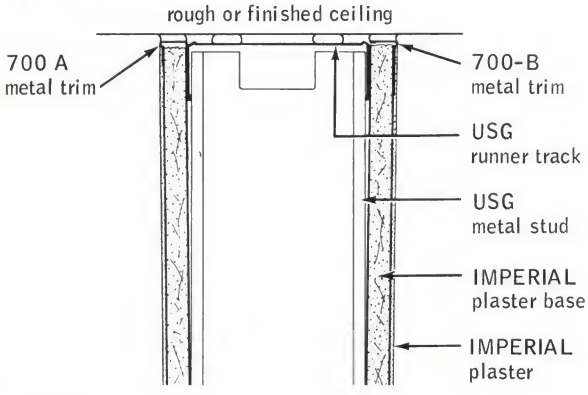
USG metal base & splice plate



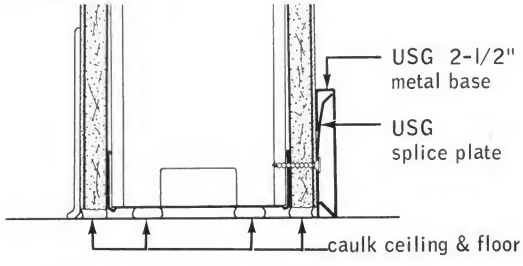
USG cold rolled channels

metal stud partitions

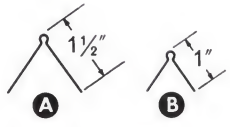
ceiling attachment



floor attachment



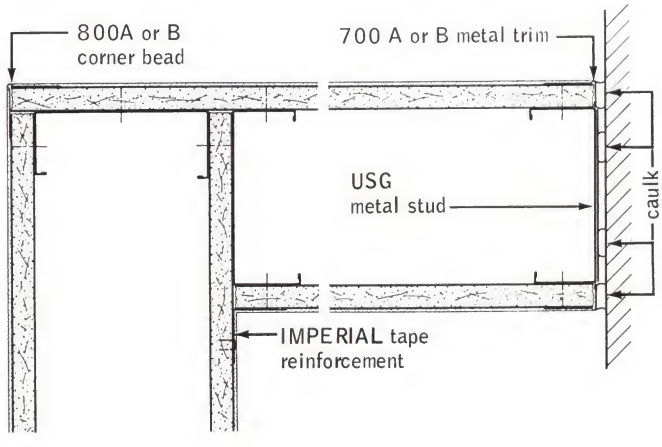
top set **metal**



800 series corner bead

700 series metal trim

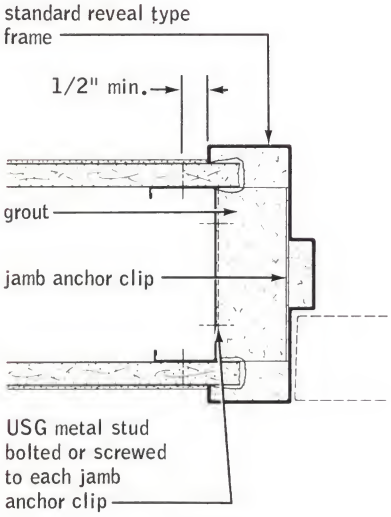
wall plan sections



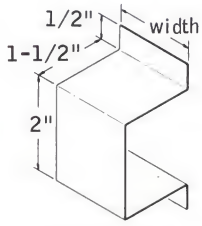
partition corner **intersection**

details

door frames

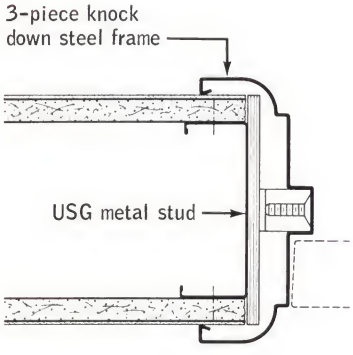


jamb

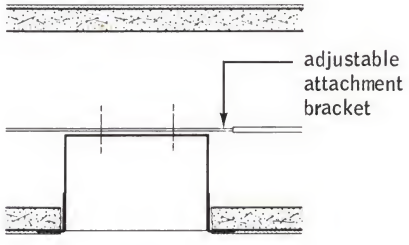


jamb anchor clip

elevation
cross section thru frame

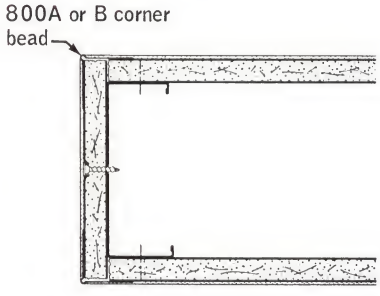


jamb

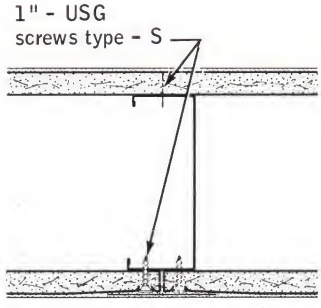


outlet box

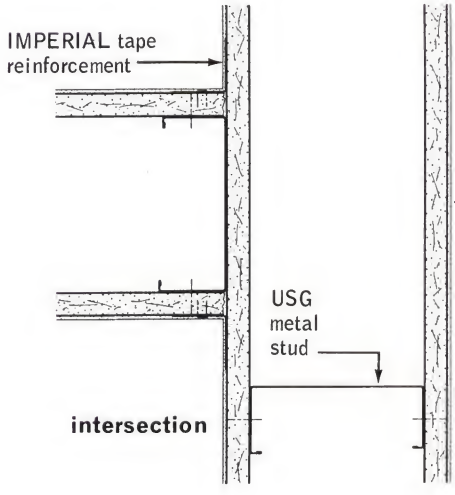
wall plan sections



partition terminal



edge joint



intersection

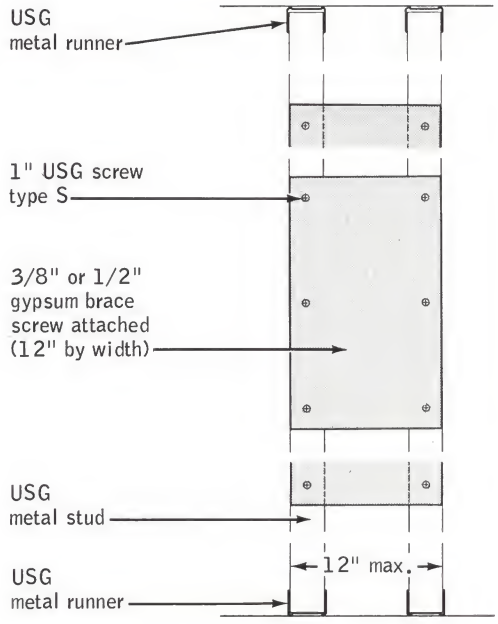
*Reg. U.S. Pat. Off.

details

chase walls

Chase walls, as vertical shafts encasing the usual plumbing supply and wastelines, vent ducts and electrical conduits, require more free space than can be provided within the usual partition assembly.

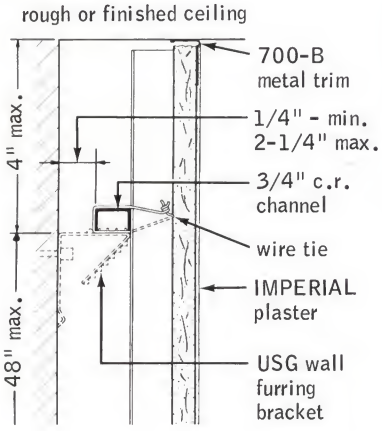
The Metal Stud chase wall may be formed of two USG Studs bracketed together with 12″x12″ gussets of ½″ or ⅝″ IMPERIAL plaster base (see detail). Gussets should be spaced not to exceed 36″ o.c. and securely attached to USG Studs using three 1″ Type S Screws. Limiting height for this chase wall is 10′.

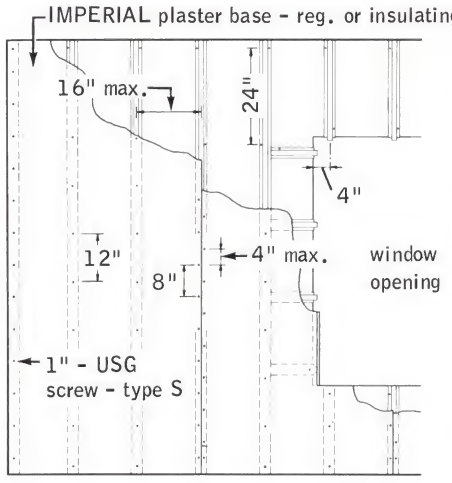


chase wall

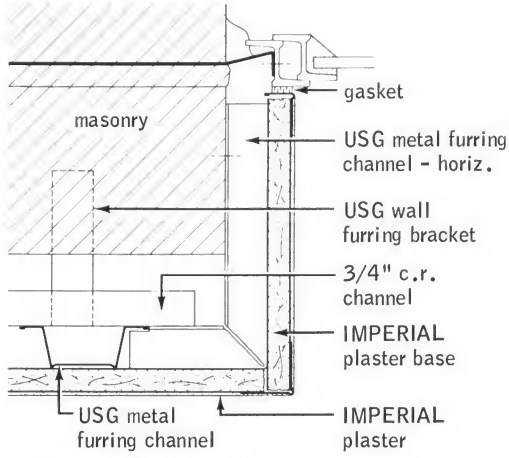
wall furring

ceiling attachment



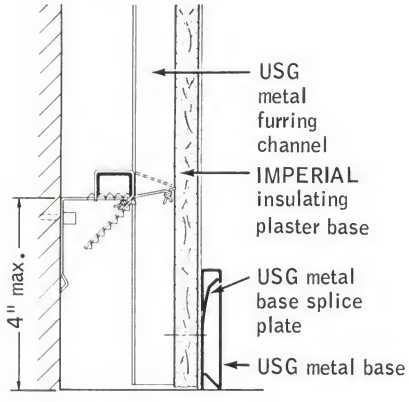


elevation—vertical application

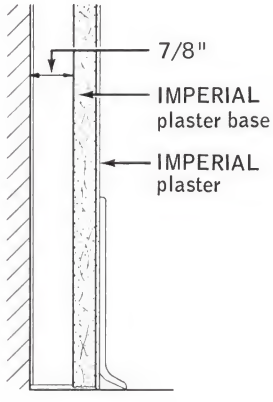


metal window jamb

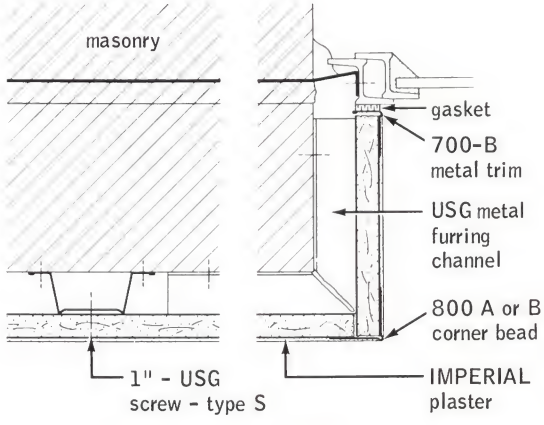
floor attachment



metal



top set

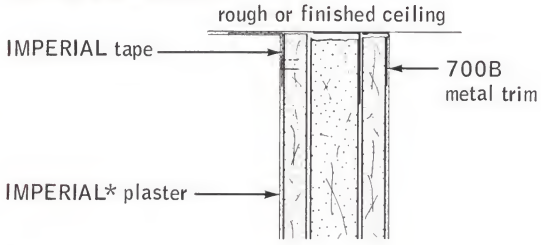


metal window jamb

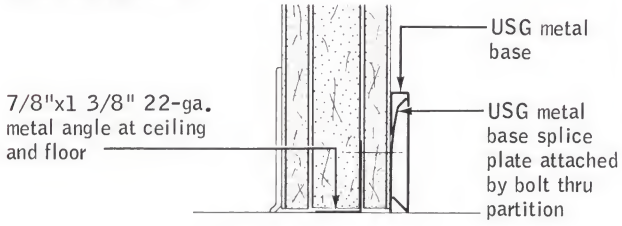
details

2¼" solid partitions

ceiling attachment

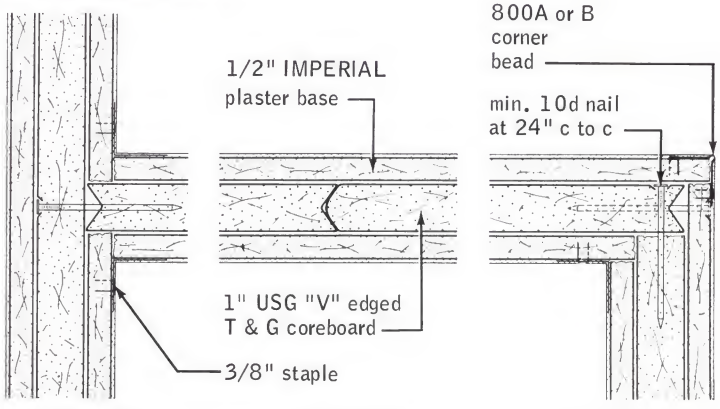


floor attachment



top set metal

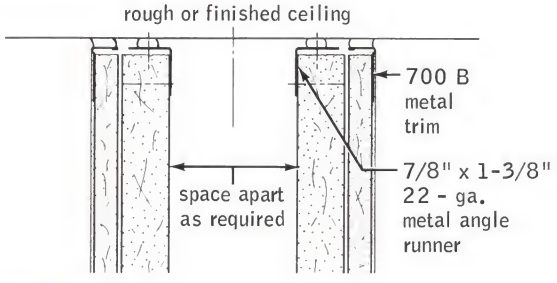
wall plan sections



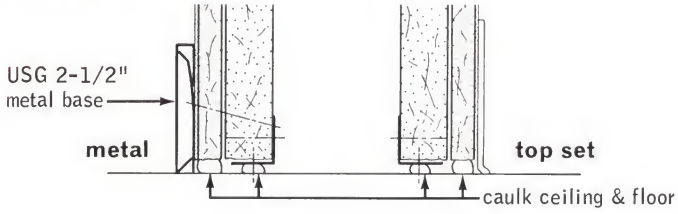
partition intersection | coreboard edge joint | partition corner

double solid partitions

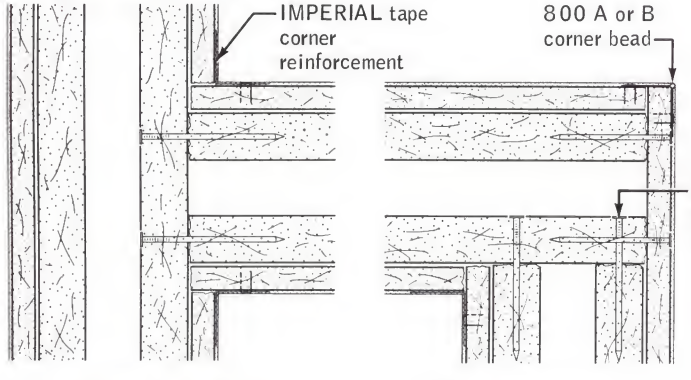
ceiling attachment



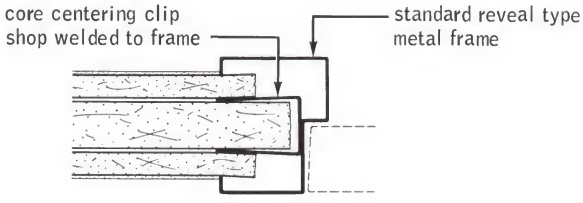
floor attachment



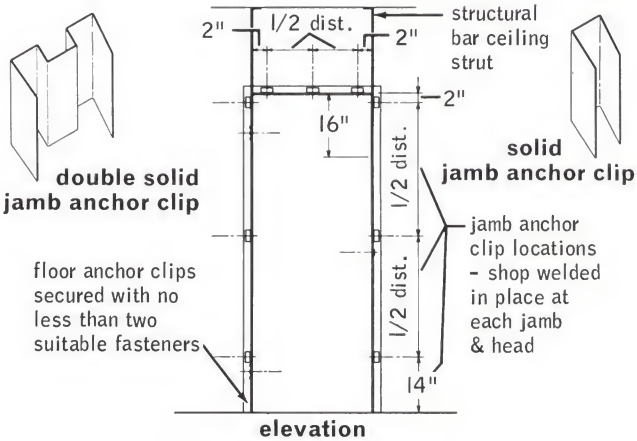
wall plan sections



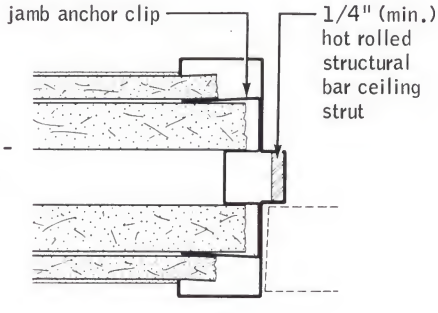
partition intersection | partition corner



jamb



elevation
cross section thru frame



jamb

*Reg. U.S. Pat. Off.

description (*continued from page 1*)

Coreboards with greater separation offer enclosures for plumbing and mechanical installation. Stapling 1½" THERMAFIBER* Sound Attenuation Blankets to back of one coreboard row gives outstanding sound isolation (Field Test STC 54) for party walls (see table, page 1).

4. Wood Studs—IMPERIAL Base may be nail or screw-attached to wood studs where 1-hour fire protection is needed. For details refer to USG Systems Folder, IMPERIAL Plaster and Wood Framing.

function and utility

IMPERIAL Plaster Systems are designed for interior partitions, exterior wall furring or wherever conventional plaster or drywall systems are used. Perfectly integrated components provide beautiful, hard surfaces ready for next-day decoration.

Durability—The high-strength, abrasion- and crack-resistant features of IMPERIAL Plaster offer the durability needed in high traffic areas, and obtainable with few other materials.

Fire Resistance—Incombustible components provide systems with fire-resistance ratings up to 2 hours (see table, page 1).

Sound Control—The systems offer sound isolation up to 54 STC; ideal for party walls.

Versatility—Adaptable to most dimensions or modules in virtually all types of buildings, these systems meet all normal design and job conditions.

Light Weight—The completed systems weigh appreciably less than masonry partitions of the same thickness.

Economy—Simple, inexpensive components erect quickly at a lower cost than conventional plaster systems. Finish is rapidly applied by machine or hand application.

limitations

1. Non-load bearing.
2. This assembly should not be used where exposed to abnormal moisture or excessively high humidity or temperature.
3. Allowable maximum stud spacing with single layer plaster base: 16" o.c.
4. Allowable maximum height:

partition description	limiting height
USG metal studs 1⅝" 2½" 3⅝"	8'-6" 11'-0" 14'-6"
chase walls	10'-0"
2¼" solid†	10'-0"
double solid	8'-0"
exterior wall furring‡	12'-0"

†Using ½" IMPERIAL Base face layers. ‡Using Adjustable Wall Furring Bracket.

specifications

notes to architect

1. *Metal door and borrowed light frames should be formed from 16-ga. steel minimum, shop primed. The opening between the trim returns should be accurately formed to the overall thickness of the partition.*

Floor anchor plates should be 14-ga. steel minimum, designed with two anchor holes to prevent rotation and welded to trim flanges to dampen door impact vibrations. Floor anchorage should be by two power-driven anchors or equivalent per plate.

Jamb anchor and core centering clips should be formed of 18-ga. steel min., and welded in the jamb and head (see details). Jamb anchor clips are screw-attached to USG metal studs.

Door frame struts, when required, should be 1"x¼" hot rolled bar stock and should extend from a minimum of 16" below head of frame in each jamb to the ceiling. Where struts are not used, temporary bracing should be used to level and plumb frame until partition is erected.

Grouting of the door frame is recommended on all installations and is required where heavy or oversize doors are used. The grout should be raked out to allow the lath and plaster to be inserted into the frame. Under no conditions should the lath and plaster terminate against the trim return of the door frame.

Door closers and bumpers are required on all doors where the weight of the door (including attached hardware) exceeds 50 lbs.

2. *Lath and plaster surfaces (non-load bearing) will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that lath and plaster surfaces be isolated from all structural elements by control joints or other means where:*

   a. *a partition abuts a structural element or dissimilar wall or ceiling assembly.*

   b. *the partition construction changes within the plane of the partition.*

In long partition runs, control joints should be provided at no more than 30' o.c. Door frames extending from floor to ceiling are recommended as control joints. For doors less than ceiling height, control joints extending from both corners of the frame to the ceiling may be used.

3. *Holes cut in a thin diaphragm of lath and plaster, such as door frames, borrowed lights, etc., cause a concentration of stresses in the plaster diaphragm. The use of additional reinforcement is recommended at the weakened area to distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

4. *Additional chases for electrical conduit or pipe can be provided in Metal Stud partitions by cutting round holes no greater in size than 75% of the stud width, located in the center of the stud web and spaced at least 12" apart. Additional holes should not be cut where a fire rating is required.*

5. **Electrical Fixtures**—*The depth of electrical boxes should not exceed 1½" for the 2¼" Solid Partition and 2½" for the Double Solid Partition when 1⅛" minimum air space is specified.*

6. **Fixture Attachment**—*Lightweight fixtures and trim should be installed by drilling and inserting a plastic plug or other expandable anchor for anchorage of attachment screws. Wood or metal mounting strips for cabinets and shelving should be toggle bolted through the lath and plaster, locating fasteners as near the studs as possible.*

7. **Ceramic Tile**—*IMPERIAL Plaster Base is not recommended as a base for the adhesive application of ceramic, metal and plastic tile unless the edges are protected from wetting and the entire surface is sealed with adhesive or other material recommended by the tile manufacturer. SHEETROCK* W|R Gypsum Wallboard is recommended for this use (see USG Product Folder in this series on Gypsum Wallboard).*

8. *Where these partitions are used as a sound barrier, the use of non-hardening caulking material to seal all cut-outs, such as at electrical fixtures, and to seal all intersections with the adjoining structure is recommended. Eliminate cutting holes back to back and adjacent to each other. Door and borrowed light openings are not recommended when these partitions are used as a party wall.*

9. *Proper sealing of IMPERIAL Plaster surfaces before painting is essential (see USG Paint Products Folder, Specifications).*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

*Reg. U.S. Pat. Off.

general conditions

In cold weather, the building shall be maintained above 55° F. for an adequate period prior to, during, and after installation of systems including the application of IMPERIAL Plaster. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company.

a. IMPERIAL Plaster Base—(½″) (⅝″) thick, 48″ wide, square edge, (Regular) (Insulating) (Type X), lengths as required.
b. IMPERIAL Plaster—(Finish) (Basecoat), used in accordance with manufacturer's directions.
c. Coreboard—1″ thick, 24″ wide, USG "V" T&G edge Gypsum Coreboard, lengths as required.
d. Laminating Adhesive—USG Laminating Adhesive mixed in accordance with manufacturer's directions.
e. Fasteners—1″ and 1⅝″ USG Screw Type S; 1½″ USG Screw Type G.
f. USG Metal Studs—(1⅝″) (2½″) (3⅝″), lengths as required.
g. USG Metal Runner—(1⅝″) (2½″) (3⅝″) for USG Metal Studs.
h. USG Metal Furring Channel.
i. IMPERIAL Tape—for joint reinforcement.
j. USG ¾″ Cold Rolled Channels.
k. USG Adjustable Wall Furring Bracket.
l. Accessories—(800-A) (800-B) Corner Bead, (700-A) (700-B) Metal Trim.

metal stud partition system

stud system erection

Metal Runners shall be aligned accurately at floor and ceiling according to partition layouts and secured with suitable fasteners to the structural elements at a spacing not to exceed 24″ o.c., or secured to suspended ceilings at a maximum spacing of 16″ o.c.

Studs shall be positioned vertically engaging both floor and ceiling runners and spaced no greater than 16″ o.c. All studs located adjacent to door and window frames, partition intersections, and corners shall be anchored to the ceiling and floor runner flanges by positive screw engagement or by locking the studs with the USG Metal Lock Fasteners. When necessary, studs shall be spliced with a minimum 8″ nested lap with one positive attachment per stud flange.

Studs shall be placed in direct contact with all door frame jambs, abutting partitions, partition corners and existing construction elements. Where a stud is installed directly to exterior walls and there is a possibility of water penetration through the walls, an asphalt felt protection strip shall be installed between the stud and the wall surface. Studs shall be securely anchored to the jamb and head anchor clips of each door or borrowed light frame by bolt or screw attachment (not required for frames with structural bar struts). Over metal door and borrowed light frames a cut-to-length section of runner track with a web-flange bend at each end shall be placed horizontally and securely fastened with one positive attachment per flange. A cut-to-length stud (extending to the ceiling runner) shall be positioned at the location of vertical joints over the door frame header.

panel erection—single layer

IMPERIAL Plaster Base shall be applied face out with long dimension (parallel—*preferred*) (at right angles) to framing members. All abutting ends and edges shall occur over stud flanges. IMPERIAL Plaster Base of maximum practical length shall be used to minimize end joints. Joints on opposite sides of a partition shall be so arranged as to occur on different studs. For vertical application of base, screws shall be spaced a maximum of 12″ o.c. in the field of the base and 8″ o.c. staggered along the vertical abutting edges. For horizontal base application, screws shall be spaced a maximum of 12″ o.c. in the field of the base and 12″ o.c. along the abutting end joints.

panel erection—double layer

For screw attachment, 1″ screws spaced 16″ o.c. for the first layer and 1⅝″ screws spaced 16″ o.c. for the second layer shall be used. In both cases the plaster base shall be applied vertically with the joints in the face layer offset from the inner plaster base layer.

In double layer laminated construction, inner plaster base layers shall be attached with 1″ USG Screws Type S spaced 8″ o.c. at joint edges and 12″ o.c. in the field. Second plaster base layers shall be applied vertically with USG Laminating Adhesive spread on the back side, joints staggered approximately 12″ and fastened to first layer with 1½″ USG Screw Type G. Screws shall be driven approximately 2′ from ends and 4′ o.c. in field of panel; 1′ from ends and 3′ o.c. along vertical edges aligned approximately 3″ from the edges.

chase wall erection

Chase wall partitions shall be aligned accurately according to the partition layout. A double row of floor and ceiling runners shall be securely attached 24″ o.c. to concrete slabs with concrete stub nails or power-driven anchors, to suspended ceilings with toggle bolts or staples, or to wood framing with suitable fasteners.

A double row of USG No. 158 metal studs shall be positioned vertically in the runners so that studs are opposite each other in pairs with the flanges pointing in the same direction, spaced no greater than 24″ o.c. All studs located adjacent to door and window frames, partition intersections and corners shall be anchored to runner flanges with USG Metal Lock Fastener or by positive screw engagement through each stud flange and runner flange.

Cross bracing between the rows of studs shall be cut from (½″) (⅝″) IMPERIAL Plaster Base into minimum 12″ by chase width pieces and screw-attached to the stud webs at quarter points in the partition height, with USG Screws Type S—spaced 8″ o.c. in each stud web or a minimum of three screws per stud web. Single face layer or base layer (½″) (⅝″) IMPERIAL Plaster Base shall be applied vertically. USG 1″ Type S Screws shall be spaced 12″ o.c. in the field of the board and 8″ o.c. staggered at the vertical joints.

wall furring—direct attachment of channels

Metal Furring Channels shall be attached vertically to masonry or concrete surfaces spaced not more than 16″ o.c.; each channel fastened with hammer-set or power-activated stud fasteners or concrete stud nails spaced 24″ o.c. on alternate wing flanges (staggered). Whenever the furring channel is installed directly to an exterior wall and there is a possibility of water penetration through the walls, an asphalt felt protection strip shall be installed between the furring channel and the wall surface.

wall furring bracket attachment of channels

USG Adjustable Wall Furring Brackets, with serrated edges up, shall be attached to the masonry walls not over 4″ from columns or other abutting construction and not over 36″ o.c. horizontally; not over 6″ from floor and ceiling, not over 48″ vertically and as required above and below windows. (One 2″ cut nail in mortar joints of brick or clay tile or cement block, or in the field of lightweight aggregate blocks) (⅝″ concrete stub nails or power-driven nails or other suitable fasteners in monolithic concrete) shall be fastened through the top hole of the brackets. ¾″ cold rolled channels shall be laid horizontally on the furring brackets with the legs down, plumbed vertically from ceiling to floor and wire tied to the bracket with a double strand of 16 ga. or triple strand of 18 ga. tie wire; excess bracket length bent down.

The Metal Furring Channel, spaced 24″ o.c. maximum, shall be erected vertically and wire tied with a double strand of 16 ga. or triple strand of 18 ga. galvanized tie wire at the junction of each ¾″ channel.

At outside corners of masonry walls the IMPERIAL Plaster Base shall be supported by attaching it to either short horizontal pieces of furring channel mitered to extend around the corners or a vertical USG Metal Stud whenever furring brackets are used.

2¼″ solid partition system erection

Floor and ceiling runners shall be accurately aligned according to the partition layout and securely fastened with suitable fasteners not less than 24″ o.c.

Coreboard shall be cut to fit accurately between floor and ceiling runners and installed vertically with tongue edge leading. Core spacer clip shall be inserted in floor and ceiling runner and nailed to coreboard panel. Erection of succeeding panels shall follow the same procedure.

At partition intersections, coreboards shall be nailed together with 10d nails spaced 24″ o.c. Panels shall be inserted in jamb anchor clips at all door frames, borrowed light frames and partition terminals and spot grouted at the clip locations.

IMPERIAL Plaster Base shall be cut to full floor-to-ceiling height. USG Laminating Adhesive shall be applied to back of face layers and laminated in place using moderate pressure to insure adequate bond. Face panel joints shall be offset at least 3″ from coreboard joints. Face layer to coreboard shall be attached with USG Type G Screws driven about 2′ from ends and 4′ in field of panel; 1′ from ends and 3′ along vertical edges aligned about 2″ from vertical edges.

double solid partition system erection

Floor and ceiling runners shall be shaped as detailed in the drawings, spaced to provide a minimum of 1⅛″ space between 1″ coreboards and securely attached to floor and ceiling constructions with suitable fasteners spaced 24″ o.c. Other specifications per 2¼″ solid partition.

accessory application

a. IMPERIAL Tape shall be applied over all IMPERIAL Plaster Base joints with a spring-driven hand stapler using ⅜″ staples. Tape shall be applied over the full length of all joints but shall not overlap at intersections. Tape shall be affixed with two staples at the top of the tape—one on each side of the joint, 24″ o.c. along the length of the tape, alternating from side to side, with two staples at the bottom.

At wall-ceiling intersections, the tape shall be stapled every 24″ along the ceiling edge only; for wall and partition interior corners, stapled every 24″ on one edge only, working from top to bottom. All interior corners shall have tape positioned to bridge the joint.

b. Laminating Adhesive shall be USG Laminating Adhesive mixed according to manufacturer's directions and spread to provide adhesive beads ½″ high x ⅜″ wide at the base and spaced 4½″ o.c. for full sheet lamination. For strip lamination adhesive shall be applied in vertical strips spaced 24″ o.c. Each strip shall consist of four adhesive beads 1½″ to 2″ o.c.

c. Corner Bead—All vertical and horizontal exterior corners shall be reinforced with 800-A or B Corner Bead fastened with staples not over 12″ o.c. on both flanges along the entire length of the bead.

d. Casing Bead—When an IMPERIAL wall or partition terminates against masonry or other dissimilar material, USG Metal Trim shall be applied over the IMPERIAL Plaster Base and fastened on the perforated side with staples spaced 12″ o.c. The trim shall firmly abut the dissimilar material forming a neat joint.

e. Screws shall be power-driven with an electric screwdriver and set so that the screwhead provides a slight depression below the surface of the IMPERIAL Plaster Base without tearing through the face paper.

UNITED STATES GYPSUM

resilient attachment

Masonry and Plaster

partitions **a** **1156**

A.I.A. File No. 10-D

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
3 hrs. est	Gypsum Tile & Plaster—3″ hol PYROBAR—2x2 wd fur 16″ o.c. vert—1½″ THERMAFIBER sound atten blkts betw fur—R-5 resil clips att to wd fur—⅜″ ROCKLATH pl base—½″ gypsum sand plaster one side & opp side ⅝″ direct—perimeter caulked wt 22.5 width 6½″	USG-123-FT-G&H (s)	55			Excellent sound & fire resistance. No outlets in 123-FT test; two caulked outlets in field test	
		Field Test KSO-1090072-f (s)	52		202		a-1156
3 hrs. est	Gypsum Tile & Plaster—4″ hol PYROBAR—R-5 resil clips—⅜″ ROCKLATH pl base—½″ gypsum sand plaster one side & opp side ⅝″ direct—perimeter caulked wt 27 width 6″	USG-110-FT-G&H (s)	50			Good attenuation. No outlets in 110-FT; two caulked outlets in field test	
		Field Test KSO-1090072-e (s)	47		178		a-1156
3 hrs. est	Gypsum Tile & Plaster—3″ hol PYROBAR—R-5 resil clips—⅜″ ROCKLATH pl base—½″ gypsum sand plaster one side & opp side ⅝″ direct wt 24 width 4⅞″	TL-60-127 (s)	52		178	Excellent fire resistance—reduces sound leaks & flanking paths	a-1156
3 hrs. est	Gypsum Tile & Plaster—3″ hol PYROBAR—#500 resil clips—¾″ cr chan & 3.4# dm met lath—¾″ gypsum sand plaster one side & opp side ⅝″ direct wt 27 width 5¼″	NBS-313 (s)	46		195		a-1156
wall furring application							
—	R-5 Resilient Clips 16″ o.c., Insulating ROCKLATH and BRIDJOINT* Clips, ½″ sanded basecoat plaster, lime putty finish	—	—	—	141	Resiliency of R-5 Clip reduces transfer of structural stresses to surface membrane	a-1156

description

In these fire-resistant assemblies, ROCKLATH* Plaster Base or USG® Metal Lath and plaster wall facings are resiliently furred from PYROBAR* Gypsum Partition Tile or other masonry surface with special USG Resilient Clips. These clips improve sound transmission loss and make this partition highly suitable for party walls. The clips also greatly reduce the possibility of movement, vibration and thermal shock being transmitted from the masonry base to the plaster surface. The resilient clips may be attached to concrete block, clay or brick masonry to provide a resiliently floated, easily decorated lath and plaster surface for these types of masonry.

In the resilient attachment of ROCKLATH over masonry, the ROCKLATH is horizontally applied with end joints staggered and secured by USG R-5 Resilient Clips. These clips are spaced not more than 16″ o.c. horizontally and vertically, furring the ROCKLATH ½″ from the masonry.

Metal lath may be resiliently furred from masonry surfaces with USG #500 Resilient Clips spaced 16″ on center. ¾″ channel spaced 16″ o.c. is wire tied to the clips and metal lath is tied to the channels.

Pre-cast into a hollow core unit 12″x30″, PYROBAR tile is easily laid-up with gypsum mortar to form a lightweight, highly fire-resistant non-load bearing masonry wall. It is available in three thicknesses, and may be plastered on one side, with a resiliently attached lath and plaster facing on the other. The finished partition has very good sound isolation and fire resistance ratings (see table above).

function and utility

Fireproof—PYROBAR Partition Tile provides the greatest fire protection per inch thickness of any commercial partition assembly—estimated 3 hours for partition plastered one side, resilient lath and plaster on other side (see table above).

Lightweight—Reduces dead load. PYROBAR Partition Tile is 30% to 50% lighter than commonly used masonry units.

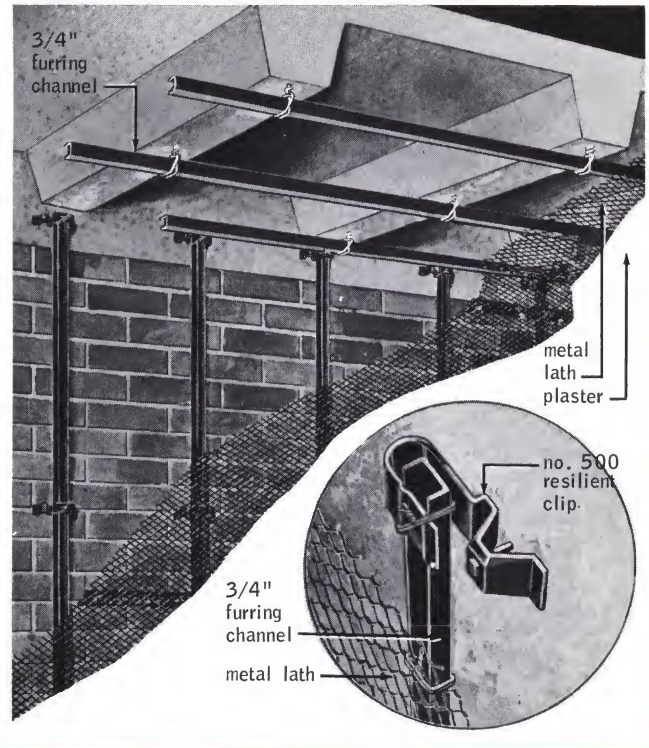
Sound Isolation—Very good sound isolation—up to 55 STC—at a low cost (see table above).

Economical—Ease of maintenance and tenant renovations continue to make PYROBAR a leading office building partition construction.

sound attenuation factors

test no.	method	decibel frequency in cps 125	175	250	350	500	700	1000	1400	2000	2800	4000	STC
TL-60-127	Lab	33	37	38	46	48	50	51	54	55	60	64	52
KSO-1090072-e	Field	25	33	37	41	46	51	53	53	56	59	63	47
USG-110-FT-G&H	Lab	28	34	40	44	47	55	58	59	61	63	61	50
USG-123-FT-G&H	Lab	37	51	49	49	54	54	58	60	60	63	62	55
KSO-1090072-f	Field	32	38	46	46	49	50	53	52	58	61	66	52

(*see page 3 for Limitations*)

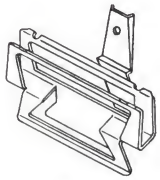


A.I.A. File No. 10-D

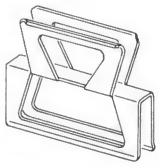
*Reg. U.S. Pat. Off.

components

see Plaster Bases product catalog for full description on accessories & sizes

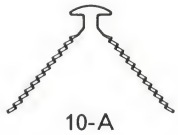


resilient clip R-5

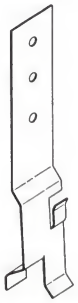


BRIDJOINT clip B-1

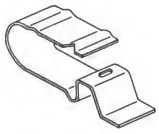
5-A
bull nose
corner bead



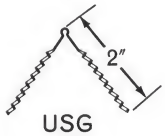
10-A
bull nose
expanded flange
corner bead



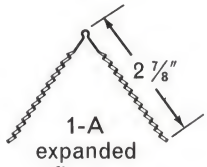
USG masonry
base clip



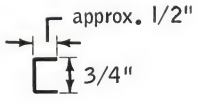
resilient clip No. 500



USG
4-R
expanded
corner bead

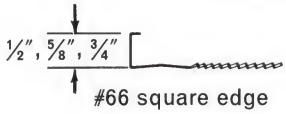


1-A
expanded
flange
corner bead

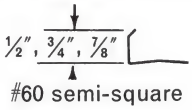


USG cold
rolled channel

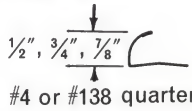
USG casing beads (expanded or short flange)



#66 square edge

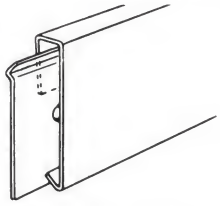


#60 semi-square

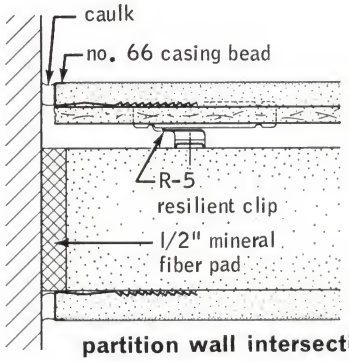


#4 or #138 quarter round

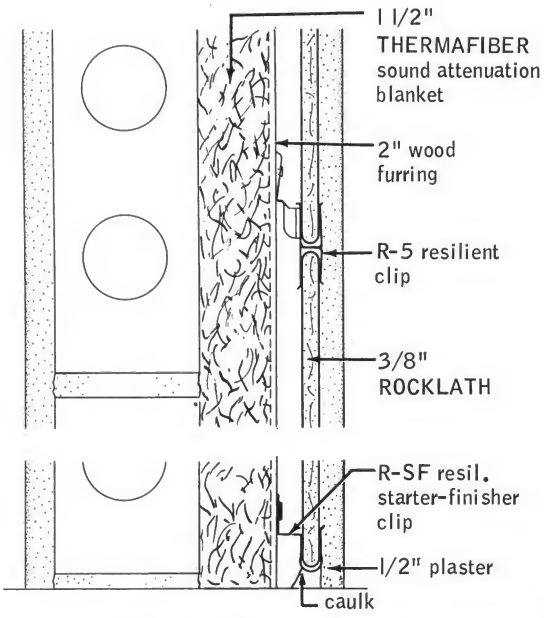
USG metal base
splice plate



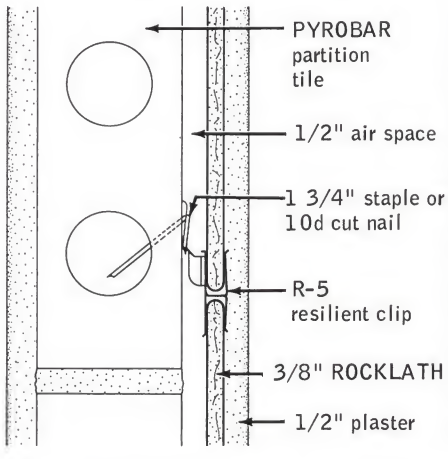
USG metal base
& splice plate



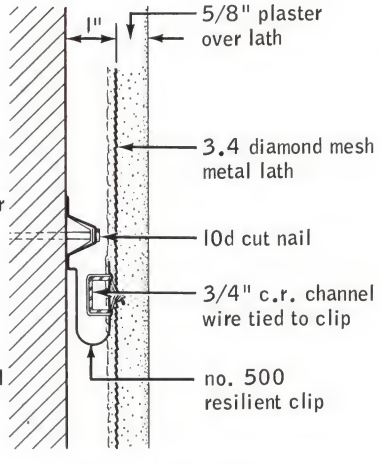
partition wall intersection



cross section wall elevation
ROCKLATH plaster base—sound isolation



cross section wall elev.
resilient ROCKLATH plaster base



wall-plan view
resilient metal lath

limitations

1. A non-load bearing partition.

2. Portland cement and lime mortars do not bond satisfactorily to PYROBAR Partition Tile. Self-furring metal lath attached to PYROBAR is required to support a portland cement plaster.

3. PYROBAR, like other masonry plaster bases, is subject to volume change due to fluctuations in temperature and humidity. Control joints should be provided to relieve these stresses (see Specifications).

4. PYROBAR is not recommended for a masonry back-up of exterior wall construction.

technical data

PYROBAR unit description	thickness	wt.-psf.	limiting height
3″ Hollow, Plaster 1 side, M/L-Pl., Res. Clip other side	5¼″	27 lbs.	13′
4″ Hollow, Plaster 1 side, M/L-Pl., Res. Clip other side	6¼″	30 lbs.	17′
3″ Hollow, Plaster 1 side, R/L-Pl., Res. Clip other side	5″	23 lbs.	13′
4″ Hollow, Plaster 1 side, R/L-Pl., Res. Clip other side	6″	27 lbs.	17′

specifications

notes to architect

1. *It is assumed that this construction will be used primarily in party walls and dividing partitions for its sound isolation value, and that such partitions will not contain openings, will not exceed 30′ in length so as to require control joints, and will not require fixture attachments. If any of these conditions are present, see "Notes to Architect" in PYROBAR Partition Tile & Plaster systems folder in this series.*

2. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

3. *To retain maximum sound isolation, the integrity of the partition should not be voided by openings such as electrical outlets, medicine cabinets, vents, etc. that create sound leaks. The use of caulking to seal all cut-outs and to seal all intersections with the adjoining structure is recommended.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill. 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

Insulating Wool Products Folder for Sound Attenuation Blanket Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. PYROBAR Gypsum Partition Tile shall be (3″) (4″) (6″) (solid) (hollow).

b. RED TOP* Partition Tile Cement.

c. Clean, sharp sand, complying with ASTM C35 (not available from U.S.G.).

d. USG Selv-edge Cornerite (2″x2″) (3″x3″).

e. USG Striplath.

f. USG Self-Furring Junior Diamond Mesh Metal Lath.

g. USG Corner Bead (specify type from page 2).

h. USG Casing Bead (specify type from page 2).

i. USG Control Joint.

j. USG ¾″ Cold Rolled Channels.

k. USG Resilient Clip R-5.

l. USG Resilient Clip No. 500.

m. USG BRIDJOINT* Clip B-1.

n. ROCKLATH Plaster Base shall be (⅜″x16″x48″) (⅜″x16″x 96″) Regular or Perforated.

o. Metal Lath shall be 3.4 lb. Diamond Mesh 27″x96″.

p. 18 ga. Tie Wire.

partition erection

All mortar shall be mixed in proportions of 1 part Partition Tile Cement to 3 parts sand, by weight. Mortar shall not be retempered.

After door frames are erected and rough plumbing and wiring are in place, the first course shall be laid with core holes horizontal by bedding mortar to a true and straight line according to partition layout as shown on plans. Succeeding courses shall be laid to a line in ½″ thick full mortar beds iniformly level in each course. Vertical joints shall be staggered and head joints shall be filled with ½″ of mortar. Cut all joints flush. Use of broken tile shall be kept to a minimum. Chinks and crevices shall be slushed full with mortar.

Lintels shall be formed as shown in the plans. Partitions shall be well anchored to intersecting masonry walls 12½″ o.c. vertically with corrugated wall ties or 16d or 20d cut nails imbedded in mortar joints.

Wedge partition tightly at ceiling with skew cut tile corners every third tile. Joints between tile and ceiling shall be slushed full with mortar.

PYROBAR shall not be chased or cut out more than half its thickness for conduit or other piping. Metal lath shall be placed flush over the chase and secured in place.

plaster base attachment

resilient metal lath

Securely attach the USG #500 Resilient Furring Clip to the face of the PYROBAR Partition using an angular driven 1¾″ staple or a 10d cut nail. Cut nails, if used, shall be driven only into the solid part of the partition and not into the core holes. Clips to be spaced not to exceed 16″ o.c. both ways. ¾″ cold rolled channels shall be erected vertically, the legs of the channel nested into the grooves on the inner face of each clip and saddle tied with a double strand of 18 ga. tie wire.

Metal lath shall be applied with the long dimension of the sheet across the supports. The ends of all lath shall be lapped not less than 1″. If end laps are made between supports they shall be adequately tied with 18 ga. tie wire. The sides of diamond mesh lath shall be lapped not less than ½″.

Wherever possible, end of lath in adjacent courses shall be staggered.

*Reg. U.S. Pat. Off.

Metal lath shall be secured to all supports at intervals not exceeding 6″.

At all interior angles, metal lath shall be formed into the corners and carried out into the abutting surface, and adequately secured.

resilient ROCKLATH

USG R-5 Resilient Clips shall be securely attached to the PYROBAR tile with an angular driven 1¾″ fence staple with one leg penetrating the PYROBAR and the other bridging the attachment flange of the clip.

The clips shall be spaced at a maximum of 16″ o.c. and at each lath end joint.

ROCKLATH Plaster Base shall be applied face out with the long dimension at right angles to the framing members. All joints shall be butted together and the lath shall be accurately cut and neatly fitted around all electrical outlets, openings, etc.

Succeeding courses of ROCKLATH Plaster Base shall be similarly applied with end joints staggered.

At the floor and ceiling line shim out the ROCKLATH using a narrow piece of ROCKLATH and nail in place.

lathing accessories

a. Cornerite (2″x2″) (3″x3″) shall be installed in all interior plaster angles. Staple at the edges (required only for ROCKLATH Plaster Base).

b. Metal Corner Bead No. (000000) shall be provided on all external plaster corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. Fasten securely with wire-ties or galvanized staples, spaced not over 8″ o.c.; stagger in two wings.

c. Casing Bead No. (000000) shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed. Wire-tie or staple in place.

UNITED STATES GYPSUM

direct attachment

partitions

a

PYROBAR* Partition Tile and Plaster

1166

A.I.A. File No. 10-D

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
4 hrs.	Gypsum Tile & Plaster—4″ hol PYROBAR tile—⅝″ 100:3 gypsum sand plaster wt 26 width 5¼″	T-118-OSU (f) NBS-305 (s)	42		159	Excellent fire protection—good plaster base	a-1166
4 hrs.	Gypsum Tile & Plaster—6″ hol PYROBAR tile—½″ 100:3 gypsum sand plaster one side only wt 28 width 6⅝″	T-26-1-OSU (f)	N/A		139	Excellent fire protection, low dead load	a-1166
3 hrs.	Gypsum Tile & Plaster—4″ hol PYROBAR tile—½″ 100:3 gypsum sand plaster one side only wt 20 width 4½″	T-118-29&30-OSU (f)	N/A		124		a-1166
3 hrs.	Gypsum Tile & Plaster—3″ hol PYROBAR—⅝″ 100:3 gypsum sand plaster wt 23 width 4¼″	T-26-5-OSU (f) NBS-304 (s)	40		154	Incombustible—good plaster base—economical	a-1166
3 hrs.	Gypsum Tile—3″ solid PYROBAR—unplastered wt 16 width 3″	T-26-3-OSU (f)			91	Excellent fire protection for weight & cost	a-1166
2 hrs.	Gypsum Tile & Plaster—3″ hol PYROBAR—⅝″ 100:3 gypsum sand plaster one side only wt 11 width 3⅝″	GA-T-1101-OSU (f)			118	Good protection for chase walls, vent & elevator shafts	a-1166
1 hr.	Gypsum Tile—3″ hol PYROBAR—unplastered wt 11 width 3″	BMS-92 table 24 (f)			78		a-1166
1 hr.	Gypsum Tile—2″ solid PYROBAR—unplastered wt 11 width 2″	BMS-92 table 24 (f)			86	For short runs & vent shafts only	a-1166

description

This partition assembly, suitable for both new construction and alteration work, consists of gypsum plaster applied directly to PYROBAR Gypsum Partition Tile. Pre-cast into a hollow core unit, 12″ x 30″, PYROBAR is easily laid-up with gypsum mortar to form a lightweight, highly fire-resistant, non-load bearing masonry wall. Indented surfaces and kiln-drying make PYROBAR an ideal plaster base that forms a strong natural bond with gypsum plaster.

PYROBAR is available in three thicknesses (see table below) and may be plastered on one or both sides to provide fire resistance ratings that meet most requirements (see table above).

function and utility

Fireproof—PYROBAR Partition Tile provides the greatest fire protection per inch of thickness of any commercial partition assembly—4 hours for two assemblies, plastered one and two sides; 3 hours for 3″ and 4″ hollow PYROBAR, both plastered and unplastered (see table above).

Lightweight—Reduces dead load. PYROBAR Partition Tile is 30% to 50% lighter than commonly used masonry units.

Plaster Bond—PYROBAR is more compatible with gypsum basecoat plasters than any other masonry plaster base.

Sound Isolation—Good sound isolation at a low cost (see table above). Where greater sound isolation is desired, resilient attachment of ROCKLATH* Plaster Base or USG® Metal Lath to PYROBAR is recommended (see USG Folder a-1156).

Economical—Ease of maintenance and tenant renovations continue to make PYROBAR a leading office building partition construction.

limitations

1. A non-load bearing partition.

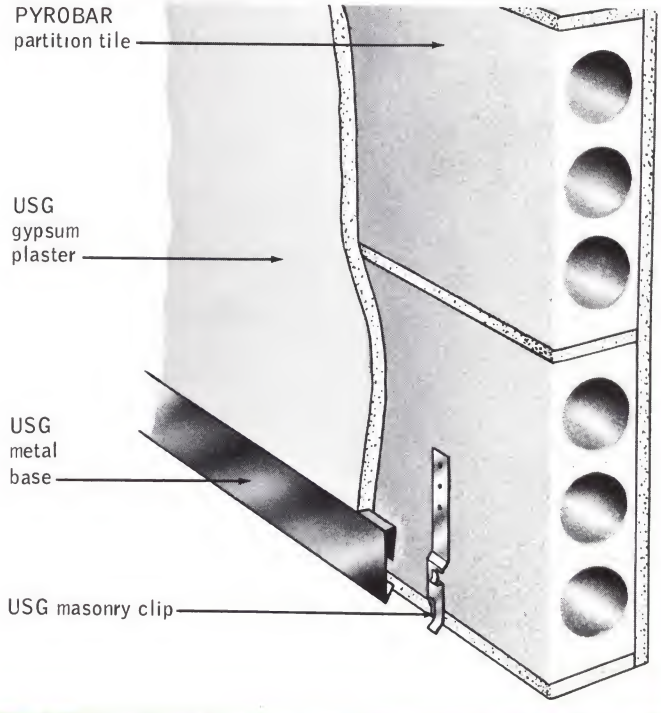
2. Portland cement and lime mortars do not bond satisfactorily to PYROBAR Partition Tile. Self-furring metal lath attached to PYROBAR is required to support a Portland cement plaster.

3. PYROBAR, like other masonry plaster bases, is subject to volume change due to fluctuations in temperature and humidity. Control joints, as detailed on page 4, should be provided to relieve these stresses (see Specifications).

4. PYROBAR is not recommended for a masonry back-up of exterior walls or less-than-ceiling-height partitions.

technical data

PYROBAR unit—description	thickness	wt.—psf.	limiting height
3″ Hollow, Unplastered	3″	11 lbs.	11′
3″ Hollow, Plaster 1 side	3⅝″	16 lbs.	13′
3″ Hollow, Plaster 2 sides	4¼″	22 lbs.	13′
4″ Hollow, Plaster 1 side	4⅝″	19 lbs.	17′
4″ Hollow, Plaster 2 sides	5¼″	24 lbs.	17′
6″ Hollow, Plaster 2 sides	7¼″	33 lbs.	30′

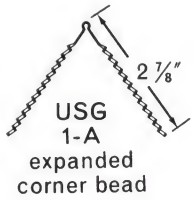


A.I.A. File No. 10-D

*Reg. U.S. Pat. Off.

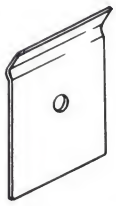
components

PYROBAR partition tile

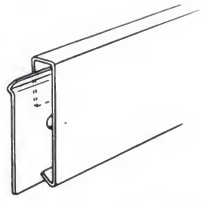


USG
1-A
expanded
corner bead

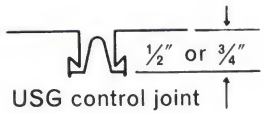
USG
4-R
expanded
corner bead



USG metal base
splice plate

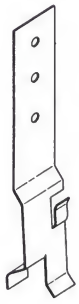


USG metal base
& splice plate



USG control joint

USG
5-A bull nose
corner bead



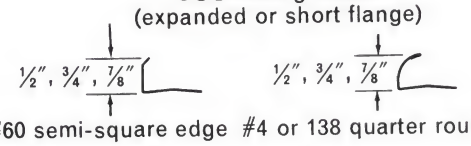
USG masonry
base clip

USG
10-A
expanded
bull nose
corner bead

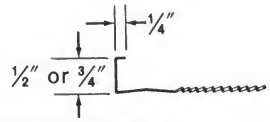
see "plaster bases" product catalog for full description on accessories & sizes

USG
selv-edge
cornerite

USG casing beads
(expanded or short flange)



#60 semi-square edge #4 or 138 quarter round



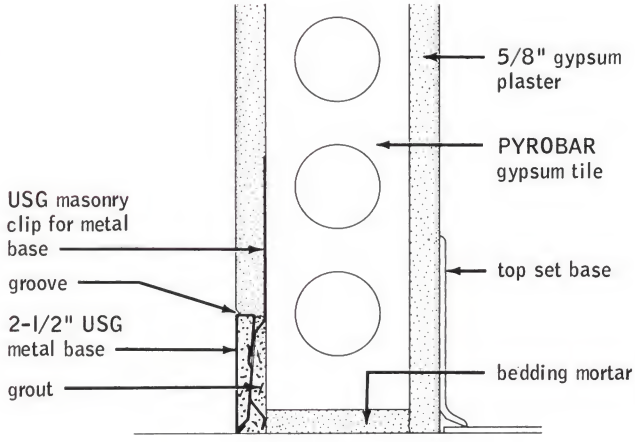
#66 square edge

USG 7-A curved point
base screed

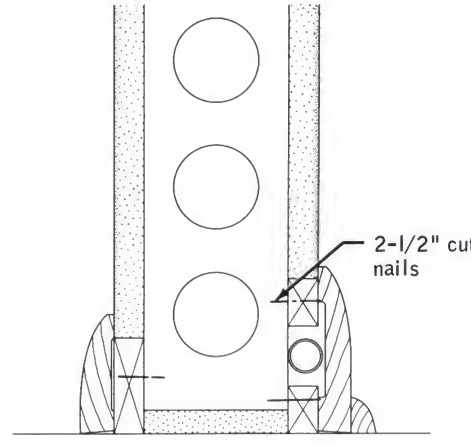
USG 8-A
picture mould

details

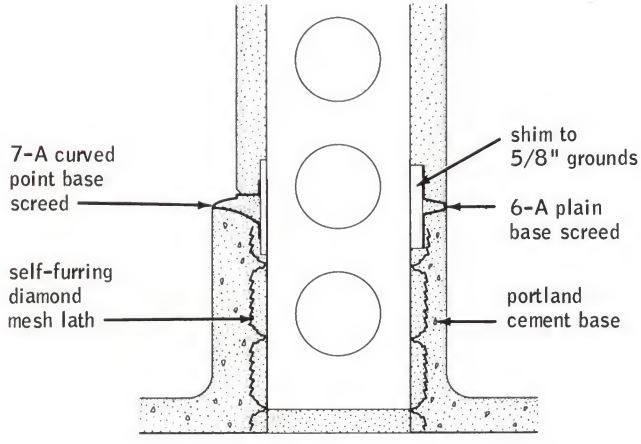
scale: 3″=1′-0″



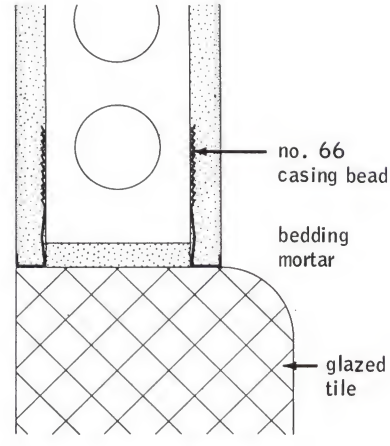
metal **top set**



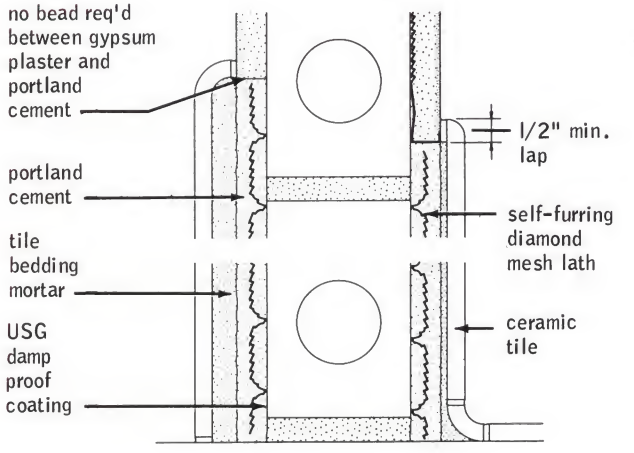
wood



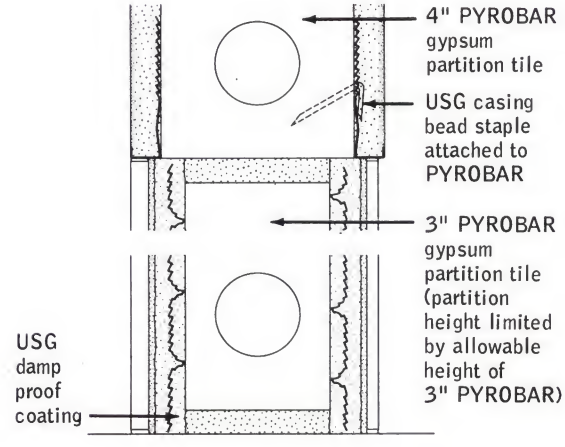
cement or terrazzo



structural glazed tile



ceramic tile

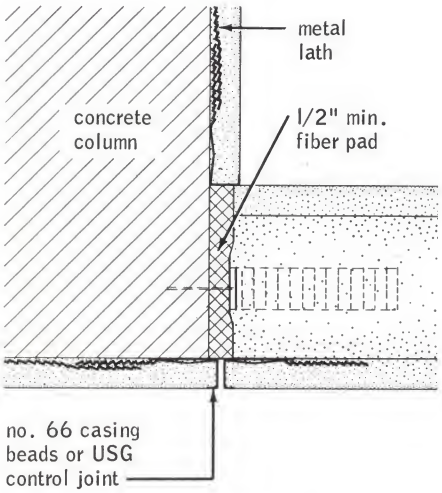


ceramic tile wainscot

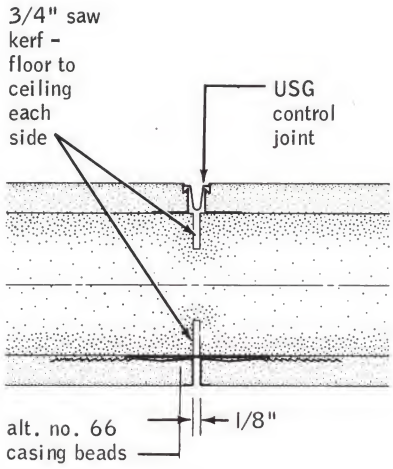
*Reg. U.S. Pat. Off.

details

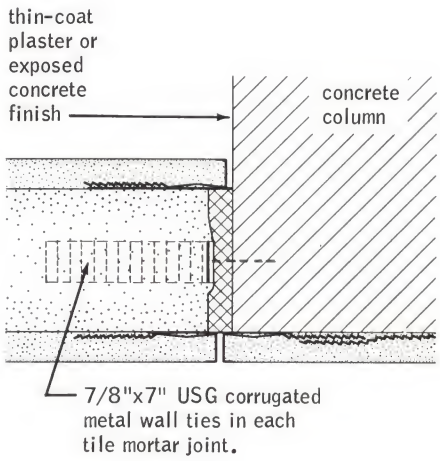
scale: 3″=1′-0″



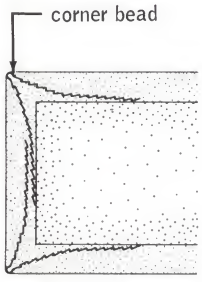
partition terminal at flush concrete column



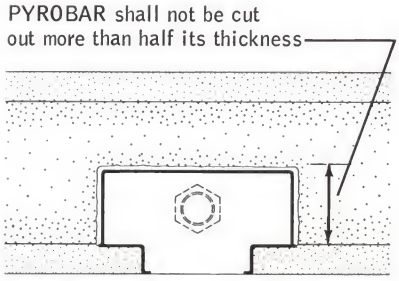
partition control joint



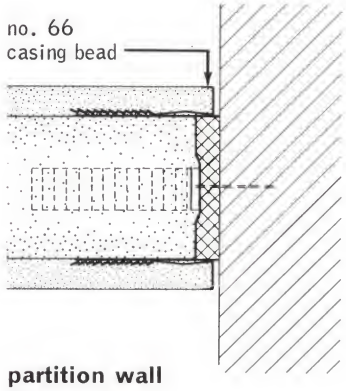
alt. partition terminal at flush concrete column



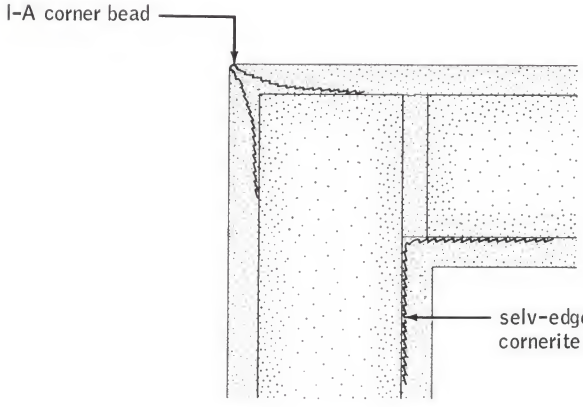
partition terminal



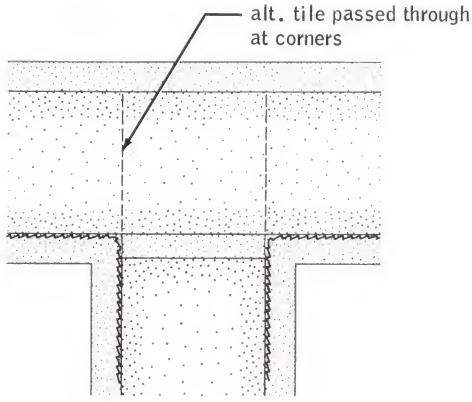
outlet box



partition wall intersection

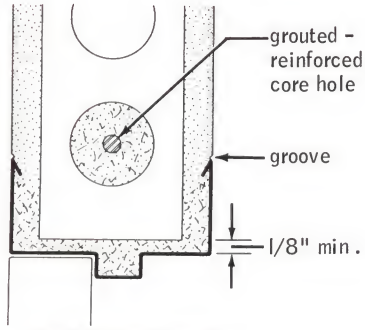


corner

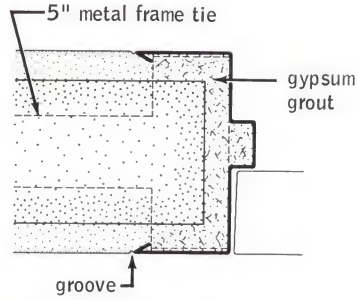


partition intersection

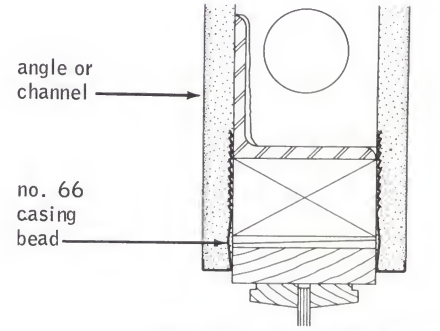
details



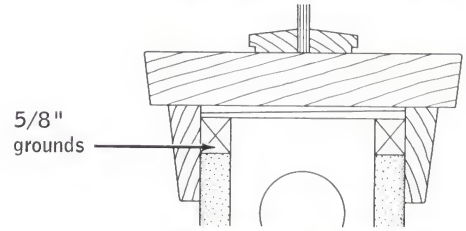
metal door head



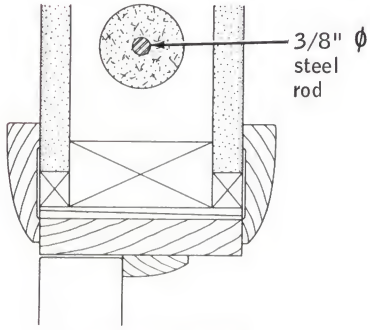
metal door jamb



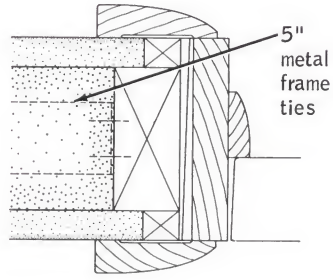
head—borrow light frame



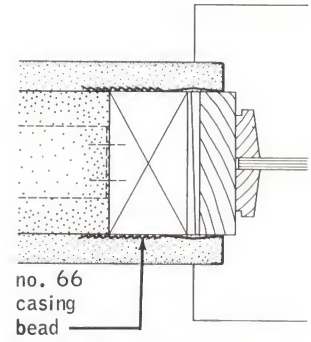
sill—borrow light frame



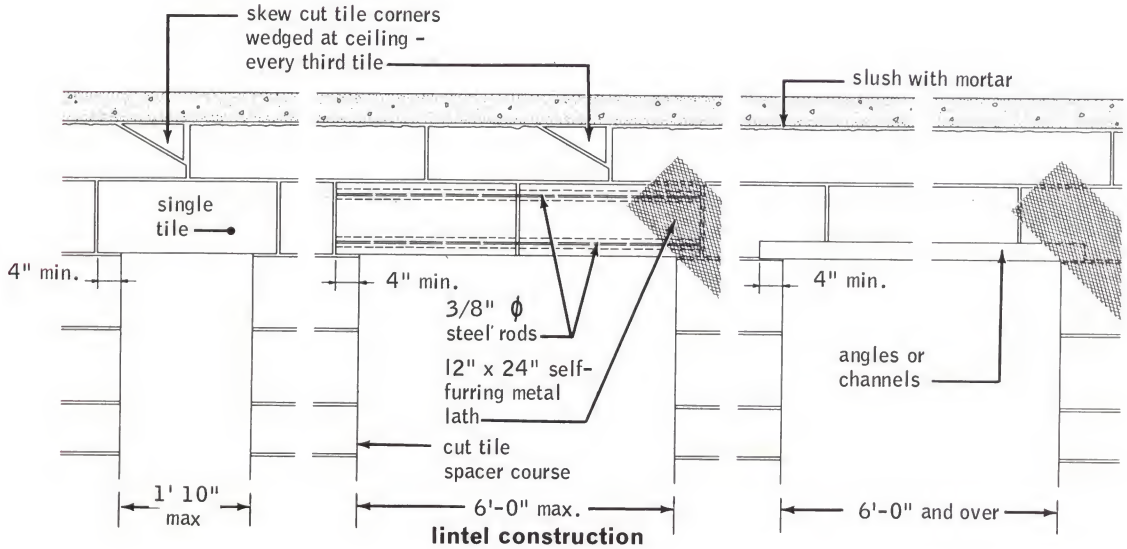
wood door head



wood door jamb



jamb—borrow light frame

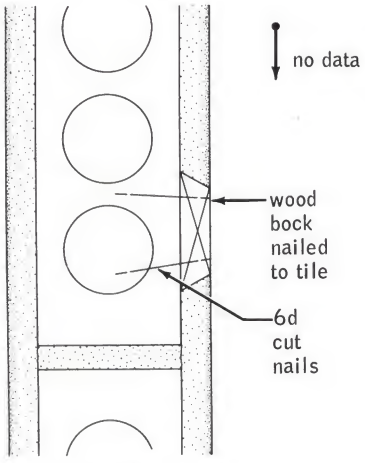


lintel construction

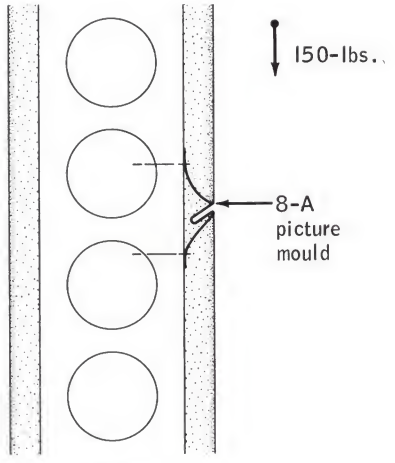
*Reg. U.S. Pat. Off.

details

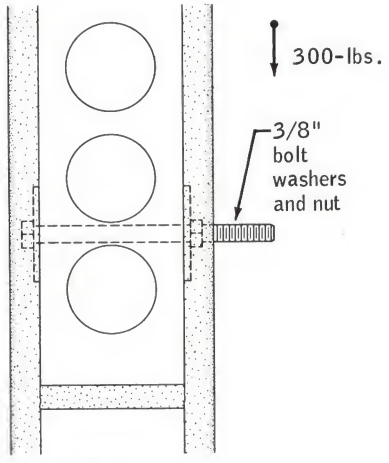
scale: 3″=1′-0″



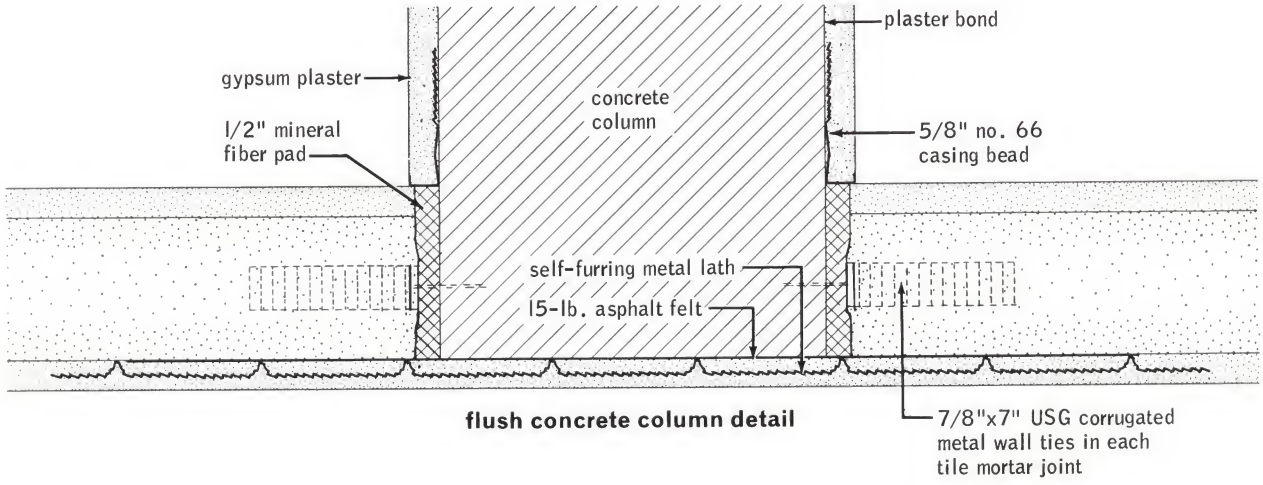
light fixture attachment



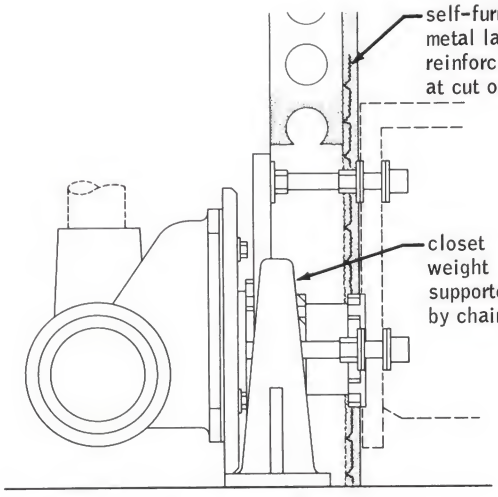
light fixture attachment



heavy fixture attachment



flush concrete column detail



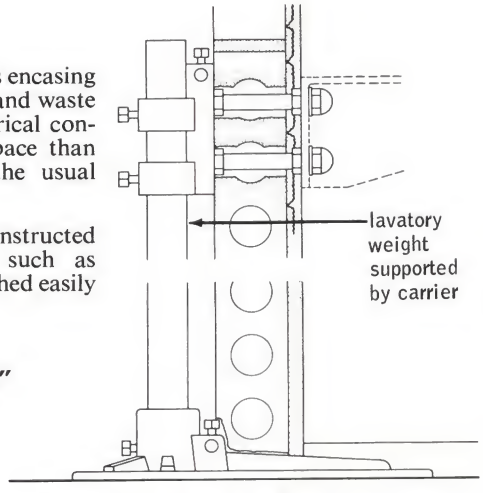
closet carrier

core walls

Core walls, as vertical shafts encasing the usual plumbing supply and waste lines, vent ducts, and electrical conduits, require more free space than can be provided within the usual partition assembly.

Core walls are readily constructed with PYROBAR. Fixtures, such as sinks, shelves, etc., are attached easily (see details).

scale: 1½″ = 1′-0″



lavatory carrier

specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *Steel door frames should be fabricated from 16 gauge metal, minimum, shop primed. The opening at the trim return should be accurately formed to the overall thickness of the partition.*

Base plates, designed with two anchor holes to prevent rotation, should be securely attached to trim returns to dampen door impact vibrations. Floor anchorage should be by two power-driven anchors or equivalent per plate.

A minimum of three 5″ metal frame ties on each jamb should be provided to anchor the frame in the mortar joints (see detail page 5). Separate bracing should be furnished to keep the frame in alignment.

Grouting by slushing mortar between the tile and the door frame is recommended on all installations and is required where heavy or oversize doors are used.

Door closers are recommended on all doors where the weight of the door (including attached hardware) exceeds 50 lbs.

3. *A minimum of two 5″ metal frame ties on each jamb of borrowed lights should be provided for anchorage in the mortar joints.*

4. *Lath and plaster surfaces (non-load bearing) will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that lath and plaster surfaces be isolated from all structural elements and control joints be specified where:*

a. *a partition abuts any structural element or dissimilar wall or ceiling assembly.*

b. *the partition construction changes within the plane of the partition.*

In long partition runs, control joints should be provided no more than 30′ o.c. Door frames extending from floor to ceiling may be used as control joints. For doors less than ceiling height, a control joint extending from the center or both corners of the frame to the ceiling may be used.

For column isolation apply a 15 lb. asphalt felt across the face of the structural members to prevent bonding of the plaster to the column or beam and then use 3.4 lb. self-furring diamond mesh lath across the asphalt felt, securely stapled to the PYROBAR (see detail page 6).

5. *Holes cut for door frames, borrowed lights, etc., cause a concentration of stresses in the plaster. The use of additional reinforcement is recommended at the weakened area to resist concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

6. *Where a plaster surface is flush with metal, metal bucks, metal windows, or metal base, the plaster should be grooved between the two materials.*

7. *Fixture attachment (see details, page 6)—Lightweight fixtures (shelves, cabinets, chalkboards, etc.) should be attached to a ⅝″ wood nailer strip or USG 8-A Picture Mould which has been secured to the PYROBAR Partition Tile. Medium weight fixtures may be secured with ⅜″ steel bolts through the tile, using 2″ steel washers on both sides of tile. Heavy fixtures should be attached to self-supporting hangers.*

8. *Ceramic Tile—Where portland cement plaster is to be applied to PYROBAR partitions as a bedding coat for ceramic tile facing or other purposes, galvanized self-furring metal lath shall be first applied to the face of the PYROBAR. A USG No. 66 Casing Bead (⅝″ grounds) or other suitable plaster stop shall be used between the portland cement plaster and gypsum plaster (see detail page 3).*

9. *Where cement or terrazzo base is used, metal lath should be secured to the first course of PYROBAR. SUPER-TITE* Damproofing Coating should be applied to the PYROBAR from rough floor up to height of wet terrazzo (concrete) base. Care should be taken to obtain thorough application at joint of PYROBAR with rough floor (see detail page 3).*

10. *To retain maximum sound isolation, the integrity of the partition should not be voided by openings such as electrical outlets, medicine cabinets, vents, etc. that create sound leaks.*

11. *When used as a vertical elevator shaft enclosure, the PYROBAR assembly should be laterally restrained at the top with masonry anchors, Cornerite, or continuous angles.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill. 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. PYROBAR Gypsum Partition Tile shall be (3″) (4″) (6″).

b. RED TOP* Partition Tile Cement.

c. Clean, sharp sand, complying with ASTM C35 (not available from U.S.G.).

d. USG Metal Base—2½″ (18) (20) ga.

e. USG Metal Base Splice Plate.

f. USG Masonry Base Clip.

g. USG Selv-edge Cornerite (2″ x 2″) (3″ x 3″).

h. USG Striplath.

i. USG Self-Furring Junior Diamond Mesh Metal Lath.

j. USG Corner Bead (specify type from page 2).

k. USG Casing Bead (specify type from page 2).

l. USG Control Joint.

*Reg. U.S. Pat. Off.

partition erection

All mortar shall be mixed in proportions of 1 part Partition Tile Cement to 3 parts sand, by weight. Mortar shall not be retempered.

After door frames are erected and rough plumbing and wiring are in place, the first course shall be laid with core holes horizontal by bedding mortar to a true and straight line according to partition layout as shown on plans. Succeeding courses shall be laid to a line in ½″ thick full mortar beds uniformly level in each course. Vertical joints shall be staggered and head joints shall be filled with ½″ of mortar. Cut all joints flush. Use of broken tile shall be kept to a minimum. Chinks and crevices shall be slushed full with mortar.

Lintels shall be formed as shown in the plans. Partitions shall be well anchored to intersecting masonry walls 12½″ o.c. vertically with corrugated wall ties or 16d or 20d cut nails imbedded in mortar joints.

Wedge partition tightly at ceiling with skew cut tile corners every third tile. Joints between tile and ceiling shall be slushed full with mortar.

PYROBAR shall not be chased or cut out more than half its thickness for conduit or other piping. Metal lath shall be placed flush over the chase and secured in place.

Steel door frames shall be anchored to the PYROBAR with frame ties furnished by door frame manufacturer, minimum three each side (approximately 12″ from top and bottom and at center) laid in mortar joints. Space between tile and door frame jamb shall be slushed full with mortar as tile is laid into frame. Lintel construction shall be held at least ⅛″ above head of frame with mortar.

Borrowed light openings shall be anchored the same as door frames, except only two metal frame ties are required on the jambs (approximately at third points), of openings less than 80″ high.

lathing accessories

a. Metal Base 2½ inch, (18) (20) gauge, painted, shall be notched to a neat miter in forming all angles. Masonry Base Clips, spaced 12″ to 16″ o.c., shall be nailed to masonry. In continuous runs, ends of metal base shall be evenly butted and internally spliced with a splice plate. Base shall be securely held in place by engaging the base clips.

b. Cornerite (2″ x 2″) (3″ x 3″) shall be installed in all interior plaster angles. Nail at the edges.

c. Metal Corner Bead No. (000000) shall be provided on all external plaster corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. Fasten securely with nails or galvanized staples, spaced not over 8″ o.c.; stagger in two wings.

d. Casing Bead No. (000000) shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed. Nail in place.

e. Reinforcing—Install a strip of self-furring diamond mesh lath over joints between dissimilar plaster bases. At all openings, reinforce the corners attaching a 12″ x 24″ piece of self-furring diamond mesh lath diagonally across the corners. Metal lath shall be placed flush over conduit and pipe chases and nailed in place.

f. Control Joint shall be provided as detailed and where indicated. Nail in place.

UNITED STATES GYPSUM

partitions **a**

TRUSSTEEL* Stud and USG® Metal Lath

1176

A.I.A. File No. 20-B-1.1

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
2 hrs.	Stl Stud—Metal Lath & Plaster—2½" TRUSSTEEL studs 16" o.c.—3.4# dm met lath—¾" gypsum wood fiber plaster wt 17 width 4¼"	BMS-92 table 31 (f)	N/A		210	Excellent fire performance; highly abrasion resistant	a-1176
1 hr.	Stl Stud—Metal Lath & Plaster—3¼" TRUSSTEEL studs 16" o.c.—3.4# dm met lath—¾" 100:2-100:2 gypsum sand plaster wt 16 width 4¾"	BMS-92 table 31 (f) NBS-229 F48 (s)	41		150	Standard steel stud partition	a-1176
1 hr.	Stl Stud—Resil Metal Lath & Plaster—3¼" TRUSSTEEL studs—#400 resil clips—¼" pencil rods—3.4# dm met lath—⅝" 100:2-100:2 gypsum sand plaster wt 19 width 5¾"	T-1263-OSU (f) NBS-429 (s)	54		180	Popular construction with good sound isolation. Fire test based on assembly with 1⅝" studs	a-1176
1 hr.	Stl Stud—Resil Metal Lath & Plaster—1⅝" TRUSSTEEL studs—one side ¼" pencil rods & #400 resil clips—opp side direct—3.4# dm met lath—¾" 100:2-100:3 gypsum sand plaster wt 18 width 3¾"	T-1263-OSU (f) TL-58-8 (s)	45		159	Space-saving partition	a-1176

For wall furring application, see page 10.

description

These partition assemblies consist of USG Metal Lath, attached to open-web TRUSSTEEL* Studs. The lath is either directly wire tied to the stud or resiliently attached by means of ¼" Pencil Rods and USG Resilient Clips. By using these specially designed resilient clips, the two lath and plaster diaphragms are not rigidly coupled to the studs or each other. The excellent sound-isolative efficiency of this system results from this resilient mounting of the plaster membranes and the column of air formed within the TRUSSTEEL Studs (see table above).

TRUSSTEEL Studs utilize a truss design for superior strength, are fabricated in five stud widths (see table below) and are mill cut to job lengths. Studs are attached to the floor and ceiling by means of clips or runner tracks and TRUSSTEEL stud shoes.

Metal Lath for these assemblies is available in three types (see Specifications, page 11). 3.4 lb. Diamond Mesh Metal Lath is used as the plaster base for resilient attachment. The excellent mechanical keying properties and equal distribution of reinforcing provided by this plaster base give assemblies using it high fire resistance and sound transmission loss ratings for their weight (see table above).

function and utility

The open web of the truss design provides a maximum of free space for encasing pipes, conduits or ducts, horizontally, vertically or diagonally, without impairing the structural integrity of the assembly.

Fire Protection—Incombustible components provide systems with 1-hour and 2-hour fire-resistance ratings (see table above).

Strength—TRUSSTEEL Studs are formed of No. 7 gauge cold drawn wire, with a tensile strength of 90,000 psi. The resistance moment computed on the section modulus with the high tensile strength produces an exceptionally strong non-load bearing steel stud.

Economical—The structural integrity, the strength, the sound isolation, the open core wall and fire protection are provided by TRUSSTEEL Stud partitions at a lower cost than by other incombustible assemblies.

Performance—TRUSSTEEL Studs have been used since 1933 and now account for the majority of all non-load bearing steel studs used nationally. The continued high level of use indicates their acceptance based on their performance.

sound attenuation factors

test no.	method	decibel frequency in cps 125	175	250	350	500	700	1000	1400	2000	2800	4000	STC
TL-58-8	Lab	32.5	36.5	42	45.5	46	47.5	47	46	45	47	50	45

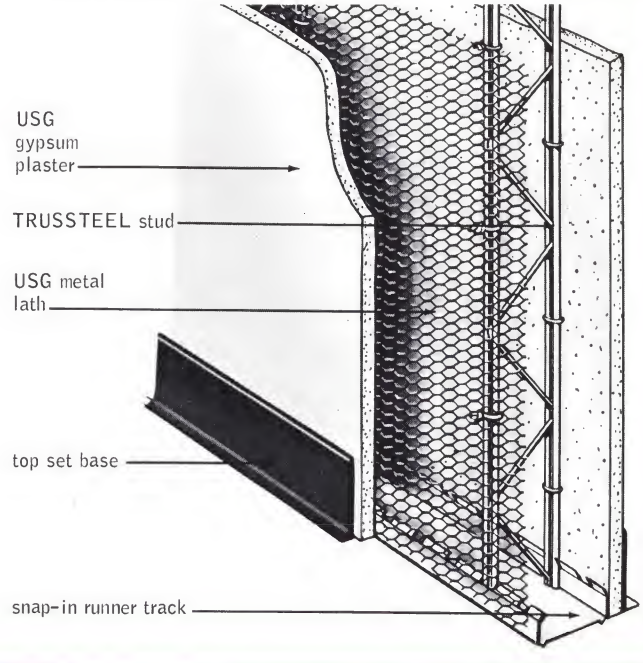
limitations

1. A non-load bearing partition.
2. Stud spacing limited to 16" o.c. for 3.4 lb. Diamond Mesh Lath, 19" o.c. for 3.4 lb. ⅛" Z-Riblath, and 24" o.c. for ⅜" Riblath (see table below for limiting heights).
3. Door frames must be fabricated and anchored to prevent twisting and impact vibration (see detail, page 5).
4. To retain maximum sound isolation, precautions must be taken to prevent sound leakage (see Specifications, page 11).
5. Where mechanically suspended acoustical tile ceilings are used, finished partitions should extend from structural slab to structural slab, closing all openings (see Notes, page 11).

partition thickness—limiting heights

stud width	section modulus	finished thickness: riblath ⅜"	finished thickness: diamond mesh or ⅛" riblath	finished thickness: resilient diamond mesh	maximum partition heights: studs 16"o.c.	studs 19"o.c.†	studs 24"o.c.‡
1⅝"	.0635"³	3⅝"	3⅛"	4⅛"	9′	—	—
2½"	.1056"³	4½"	4"	5"	15′	14′	9′
3¼"	.1420"³	5¼"	4¾"	5¾"	21′	18′	13′
4"	.1825"³	6"	5½"	6½"	22′	20′	16′
6"	.277"³	8"	7½"	8½"	26′	24′	20′

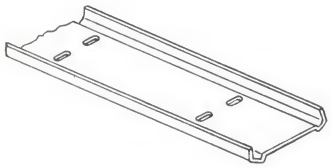
†⅛" 3.4 lb. Z-riblath or ⅜" riblath. ‡⅜" riblath only.



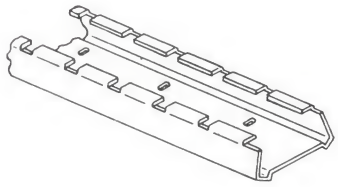
A.I.A. File No. 20-B-1.1

*Reg. U.S. Pat. Off.

components

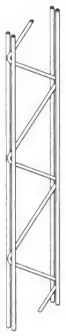


USG regular runner track



USG snap-in runner track

see "plaster bases" product catalog for full description on accessories & sizes

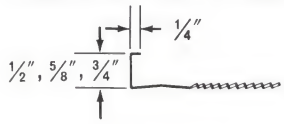


TRUSSTEEL stud

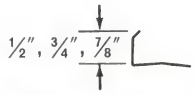
TRUSSTEEL stud shoe

#400 resilient clip

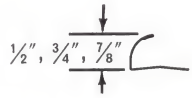
USG casing beads (expanded or short flange)



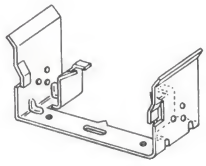
#66 square casing bead



#60 semi-square edge



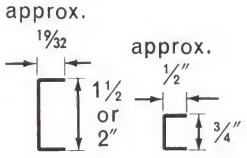
#4 or #138 quarter round



USG combination stud and base clip

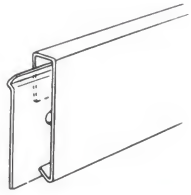
USG stud base clip

USG 10-A expanded bull nose corner bead



USG cold rolled channels

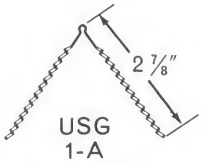
USG metal base splice plate



USG metal base & splice plate

USG 3-A expanded base screed

USG selv-edge cornerite



USG 1-A expanded corner bead

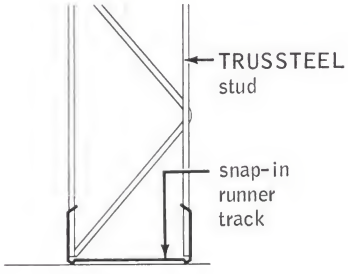
USG 6-A plain base screed

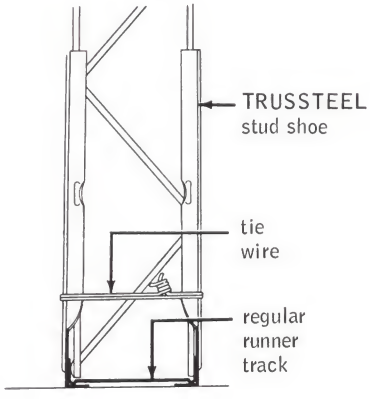
USG 4-R expanded corner bead

USG 7-A curved point base screed

USG 5-A bull nose corner bead

USG 8-A picture mould

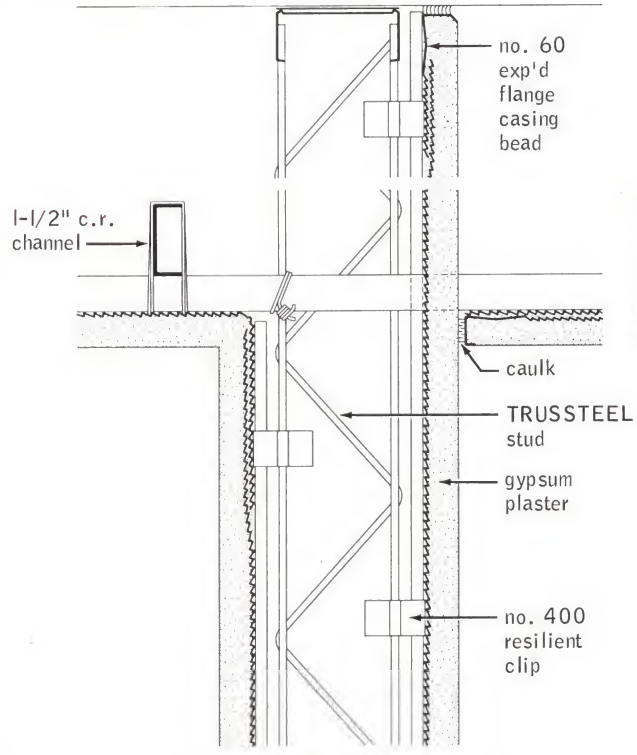




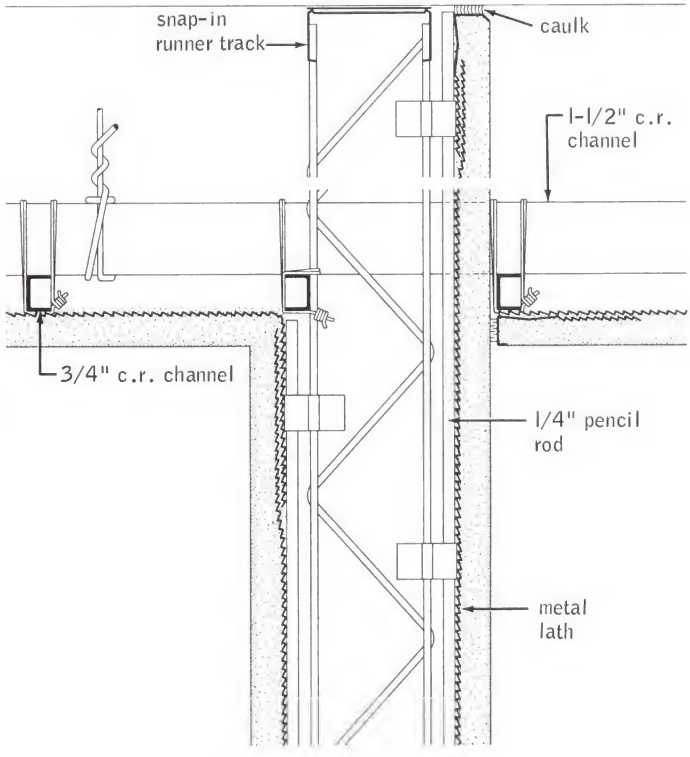
details | resilient attachment

ceiling attachments

scale: 3″ = 1′-0″

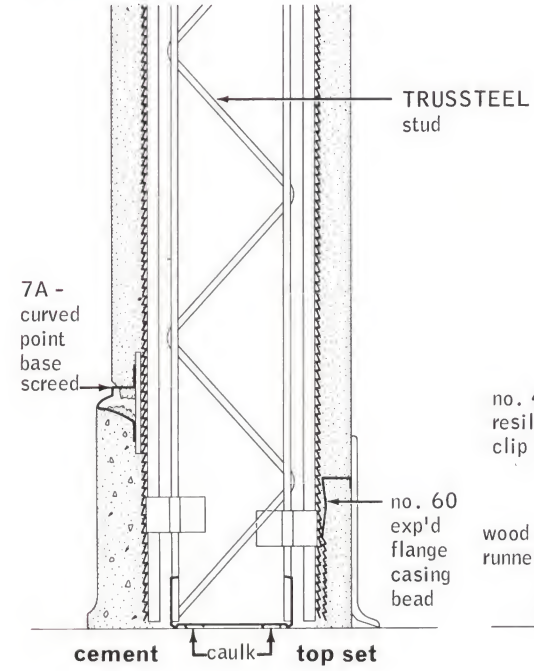


cross section transverse to furring channel

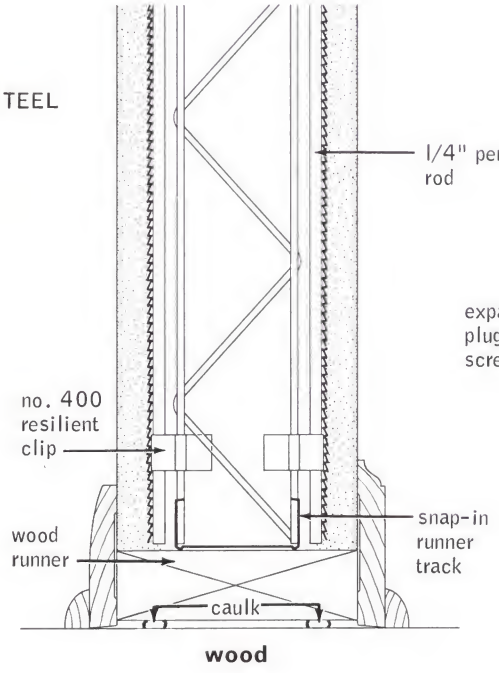


cross section parallel to furring channel

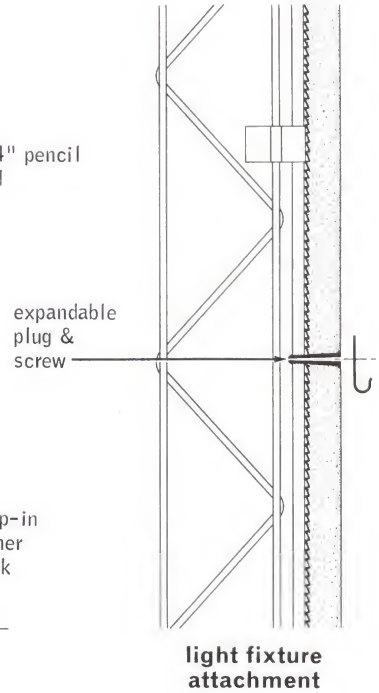
floor attachments



cement top set



wood

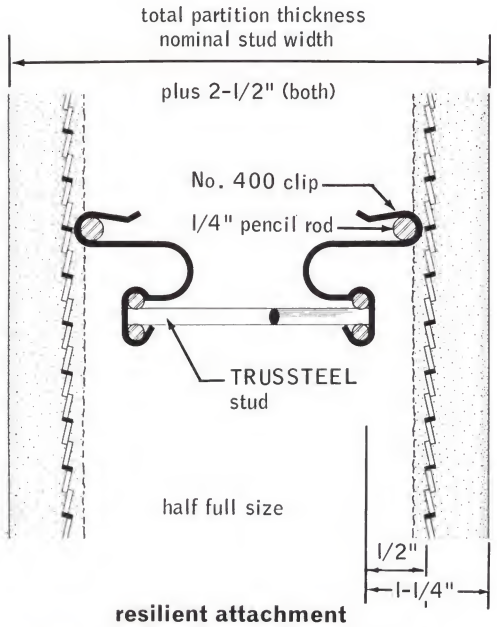


light fixture attachment

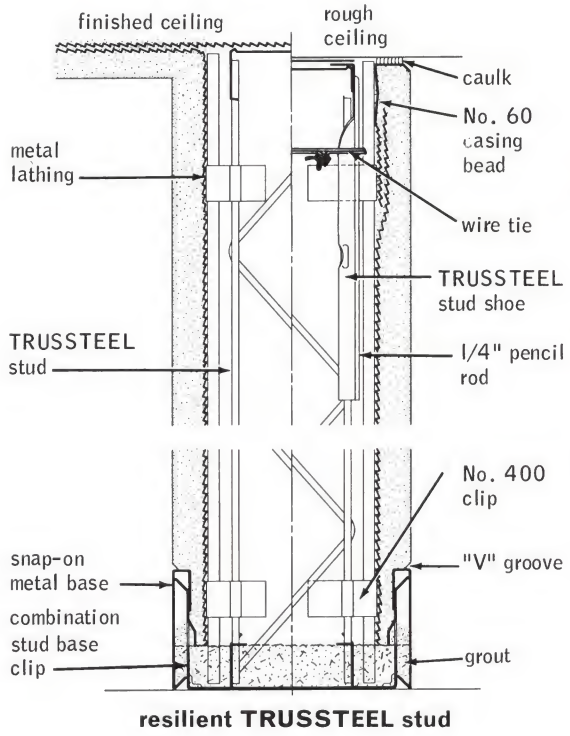
*Reg. U.S. Pat. Off.

details | resilient attachment

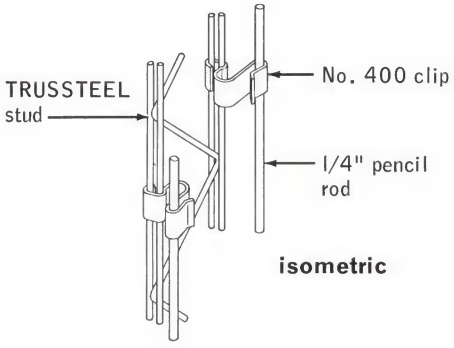
scale: 3″ = 1′-0″



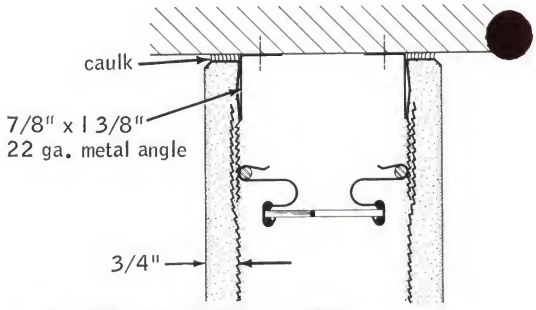
resilient attachment of metal lath to TRUSSTEEL studs



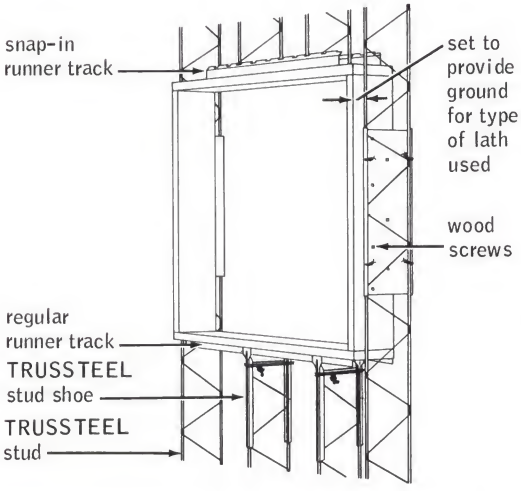
resilient TRUSSTEEL stud



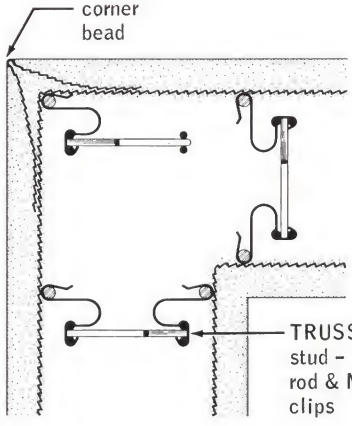
isometric



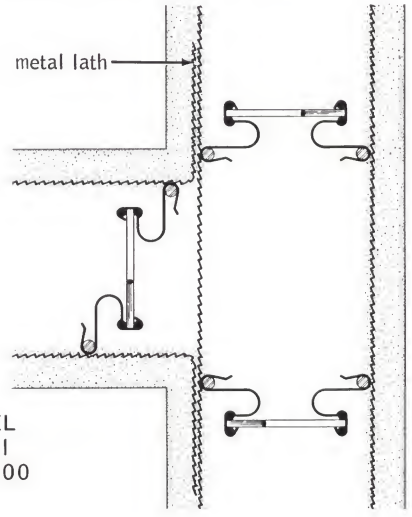
partition wall intersection



borrowed light or cabinet frame



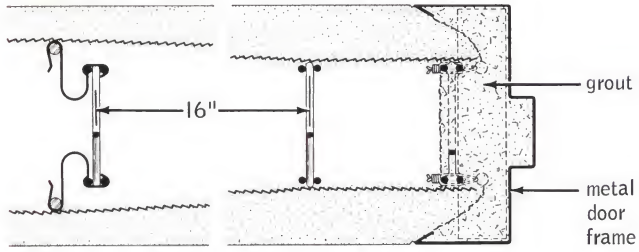
corner



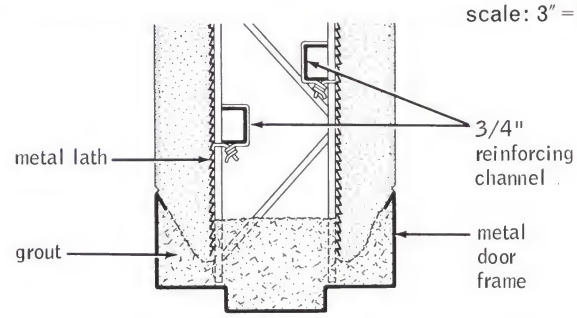
partition intersection

details | door frames

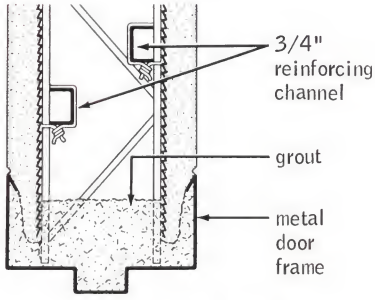
scale: 3" = 1'-0"



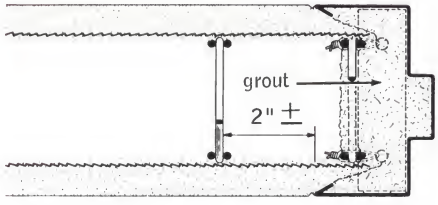
jamb section
resilient partition



head section
direct attachment

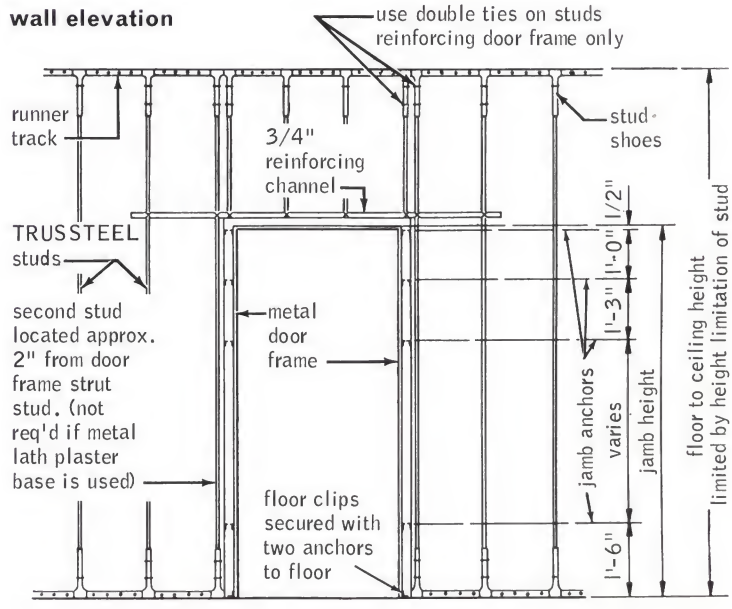


head section
resilient partition

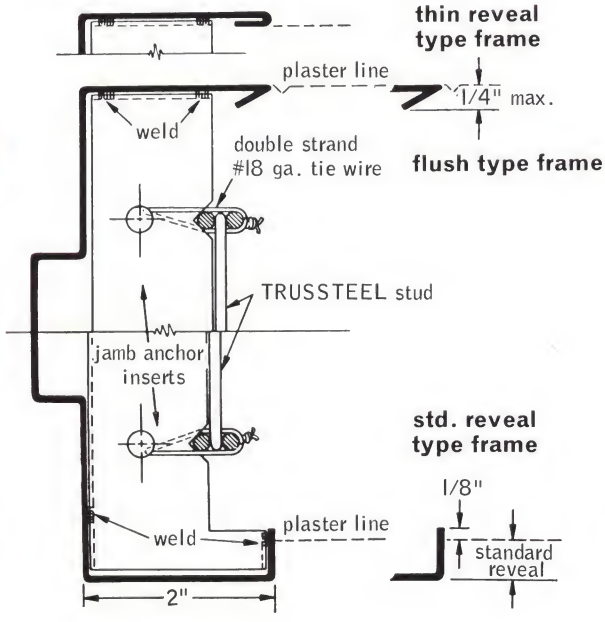


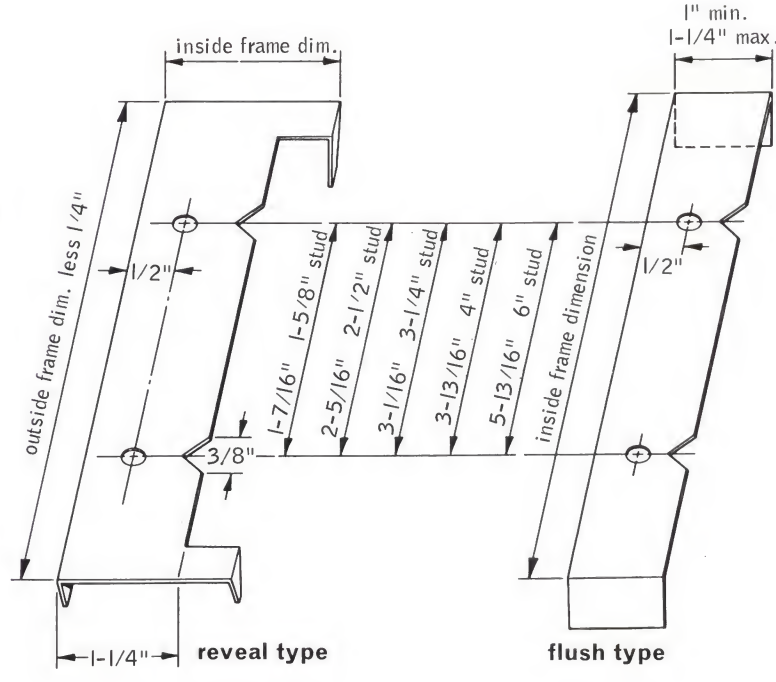
jamb section
direct attachment

wall elevation



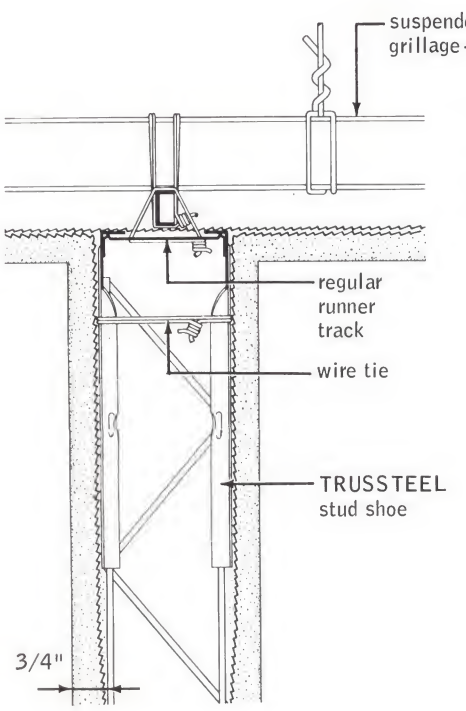
jamb anchor inserts/half size



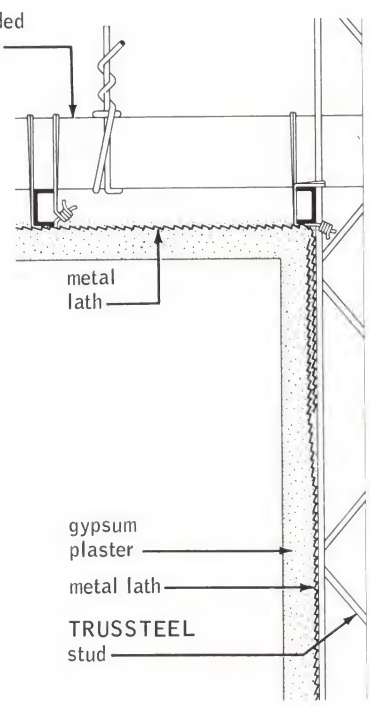


details | direct attachment

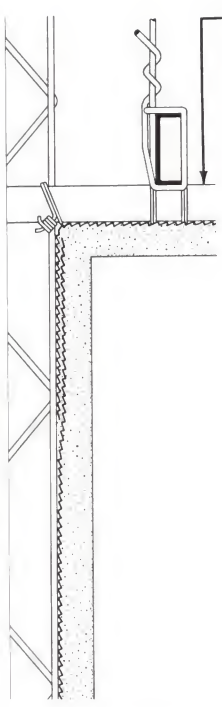
scale: 3″ = 1′-0″



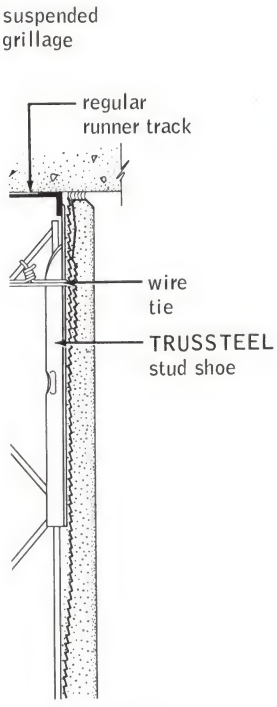
cross section parallel to furring channel



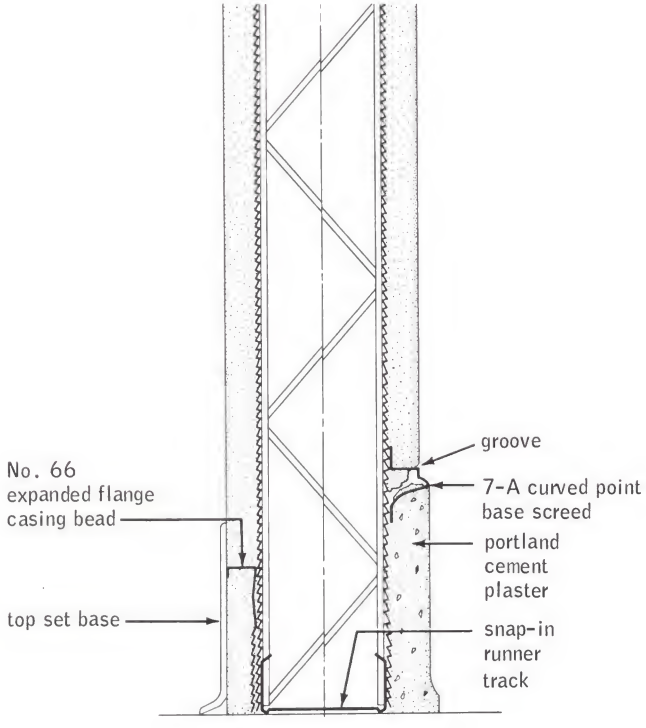
cross section parallel to furring channel



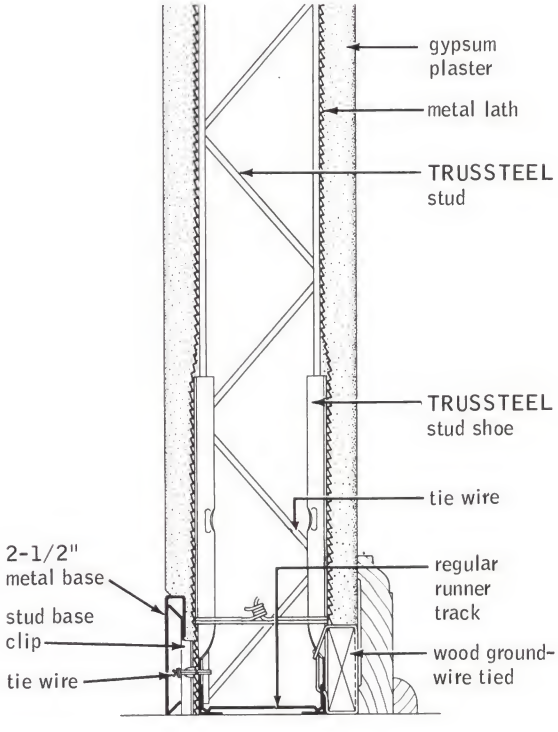
cross section transverse to furring channel



attach to concrete ceiling slab



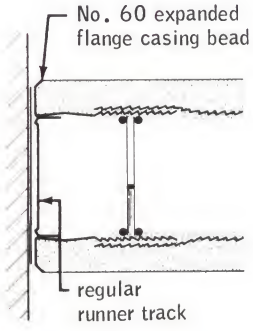
top set base **portland cement base**



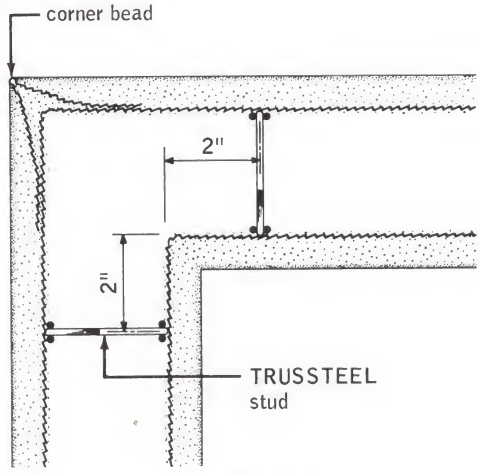
metal base **wood base**

details | direct attachment

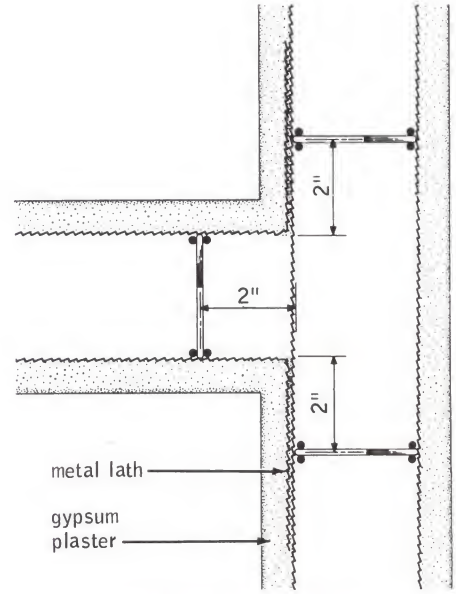
intersecting partitions



partition
wall intersection

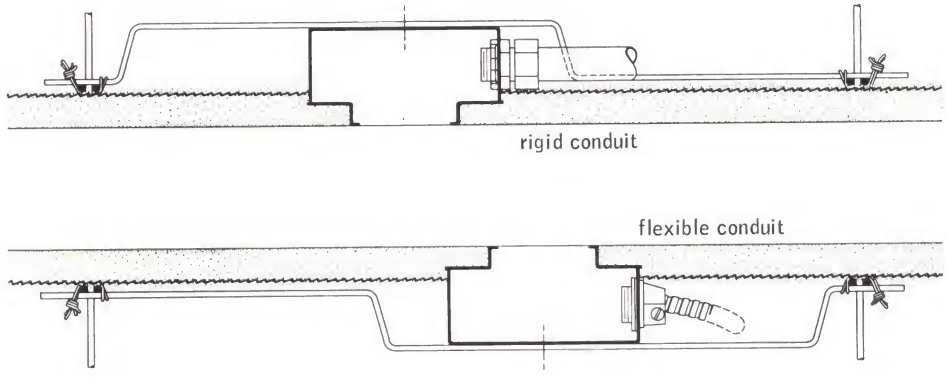


corner

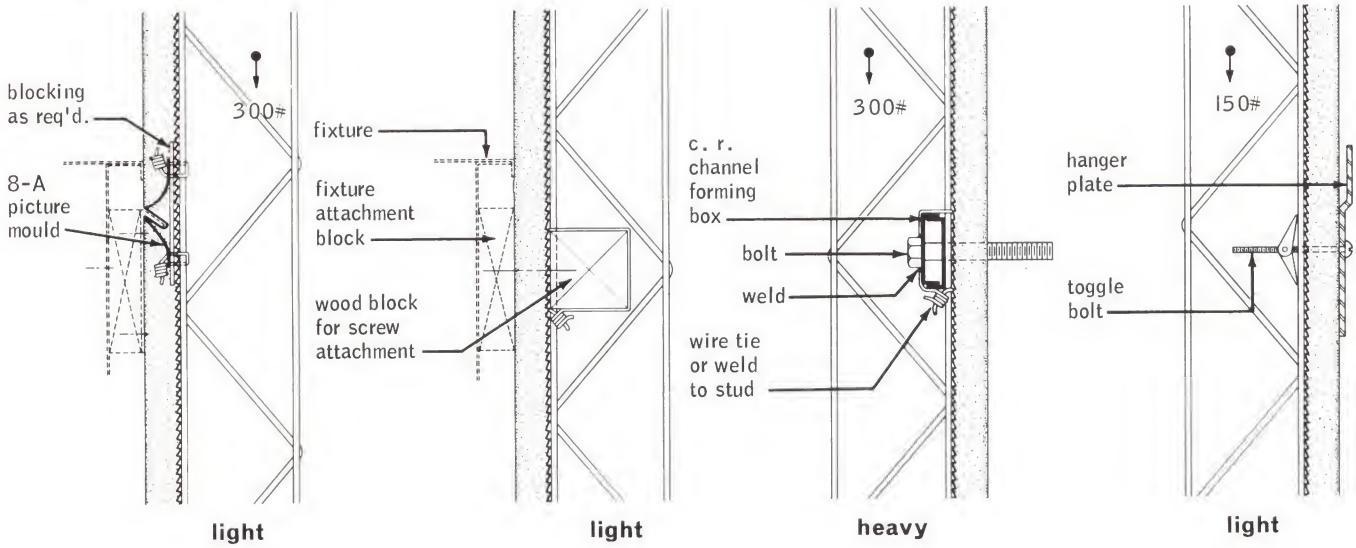


partition intersection

electrical outlets



fixture attachments



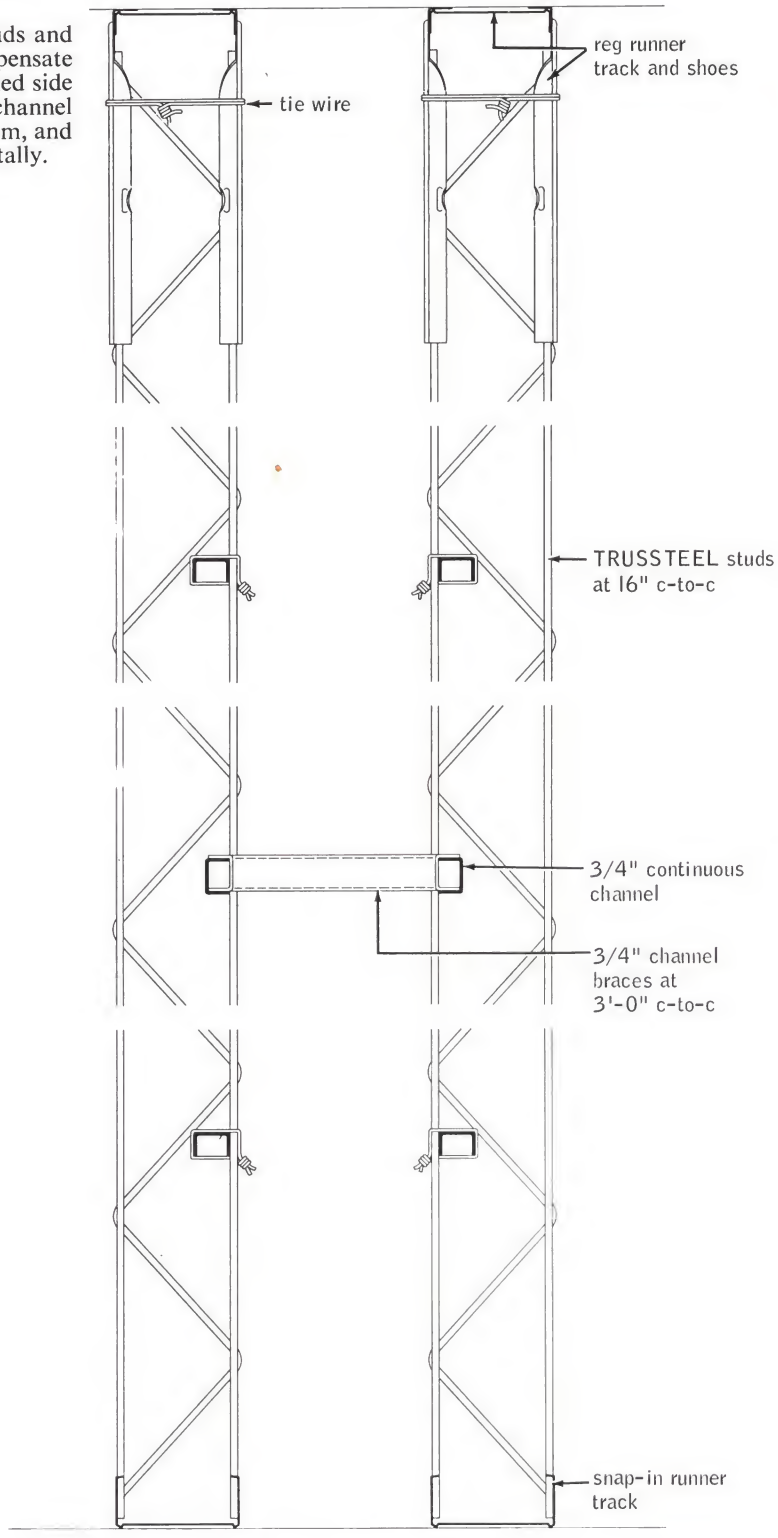
light light heavy light

core walls

scale: 3″ = 1′-0″

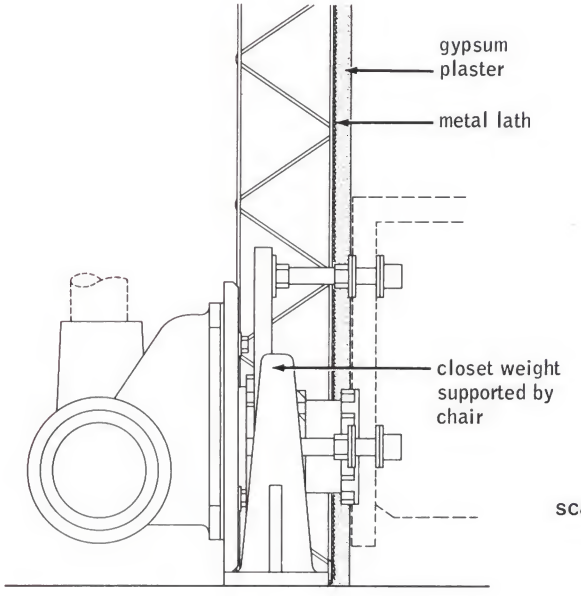
Core walls, as vertical shafts encasing the usual plumbing supply and waste lines, vent ducts and electrical conduits, require more free space than can be provided within the usual partition assembly.

Core walls are easily constructed using TRUSSTEEL Studs and Metal Lath provided proper bracing is used to compensate for the stress skin action of the one side. The non-lathed side of the studs should be braced with ¾″ continuous channel girts at the quarter points vertically or 48″ o.c. maximum, and ¾″ channel bracket mid-girts spaced 36″ o.c. horizontally.



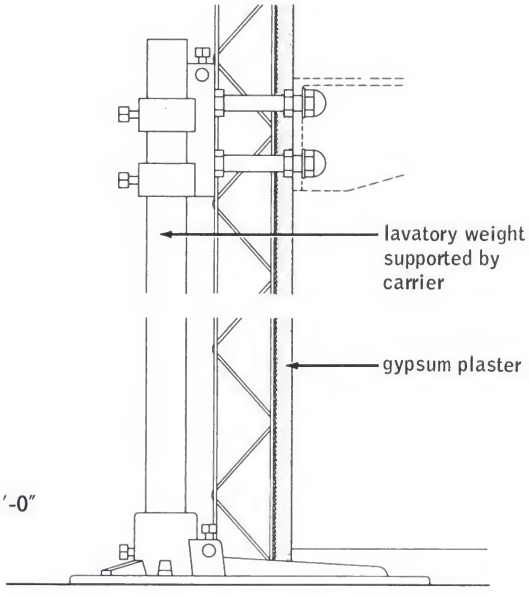
TRUSSTEEL stud core wall

details

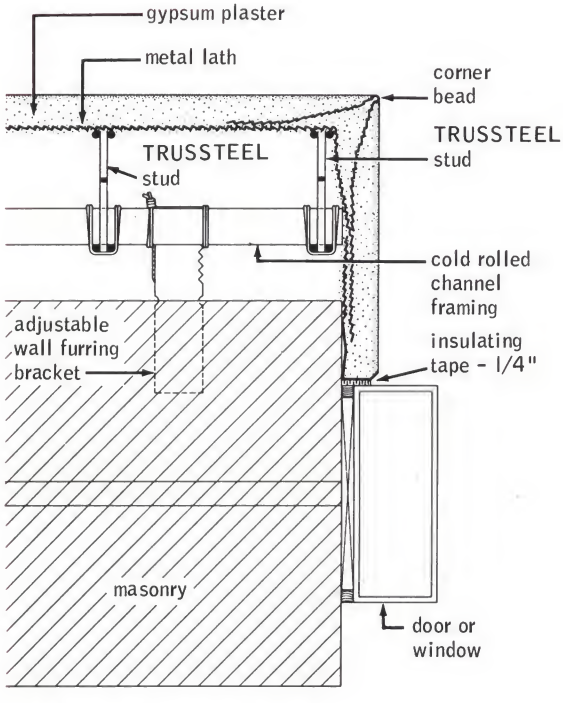


closet carrier

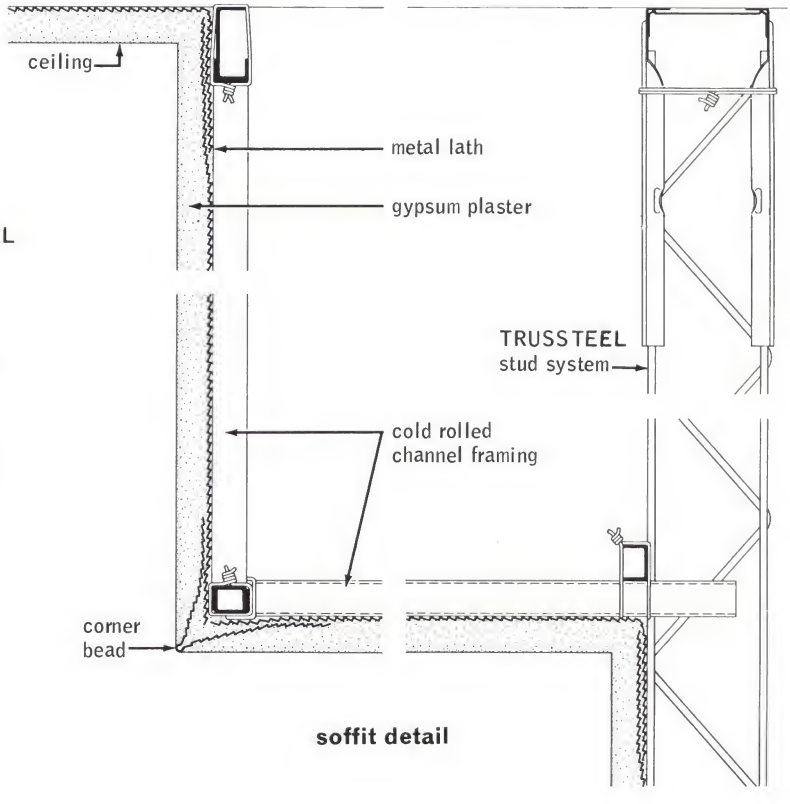
scale: 1½" = 1'-0"



lavatory carrier



furred wall-jamb return



soffit detail

*Reg. U.S. Pat. Off.

exterior wall furring

description	relative cost index	comments	folder reference
TRUSSTEEL Studs 16″ o.c. cross braced 4′ o.c. on the back chord, 3.4# diamond mesh metal lath, ⅝″ sanded basecoat plaster, lime putty finish coat	203	Free standing; allows for pipe chase clearance; no vapor barrier.	a-1176

It is recommended that all exterior masonry walls be furred. Asphaltic or bituminous bonding agents are not recommended as a plaster base. TRUSSTEEL Studs, metal lath and plaster provide an exterior wall furring system that offers a maximum free space for encasement of pipes, ducts or conduits and a finished, readily decorated interior wall surface.

This construction consists of TRUSSTEEL Studs as vertical members braced with horizontal ¾″ channels. A channel at the mid-point between the floor and ceiling is attached to the wall with USG Adjustable Wall Furring Brackets not more than 24″ o.c. horizontally. TRUSSTEEL Studs, with spacing determined by the maximum allowable spacing of supports for the type of metal lath used (see table, page 1) are wire-tied to these horizontal channels. Metal lath is wire-tied to the TRUSSTEEL Studs and plastered to ⅝″ grounds, over the face of the lath. The Adjustable Wall Furring Brackets and extra channel at mid-height may be omitted to obtain free standing furring.

TRUSSTEEL stud size	maximum height[1]	
	braced furring	free-standing furring
1⅝″	9′	6′
2½″	15′	10′
3¼″	21′	14′
4″	22′	15′
6″	26′	17′

(1) Based on 16″ spacing between studs.

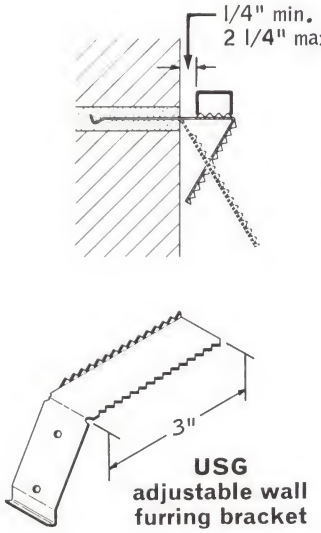
adjustable wall furring brackets

1. Attach wall furring not more than 24″ o.c. horizontally and 48″ o.c. vertically.

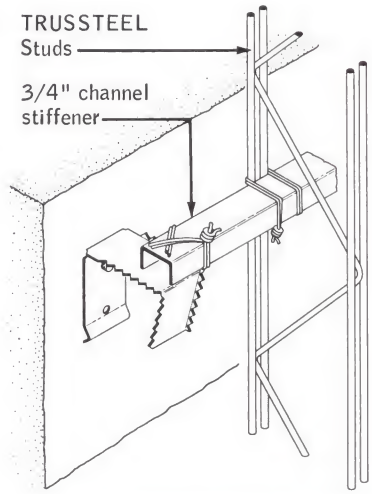
2. After attachment, bend bracket to horizontal position.

3. Wire-tie plumbed channel to bracket ¼″ min. (2¼″ max.) from wall.

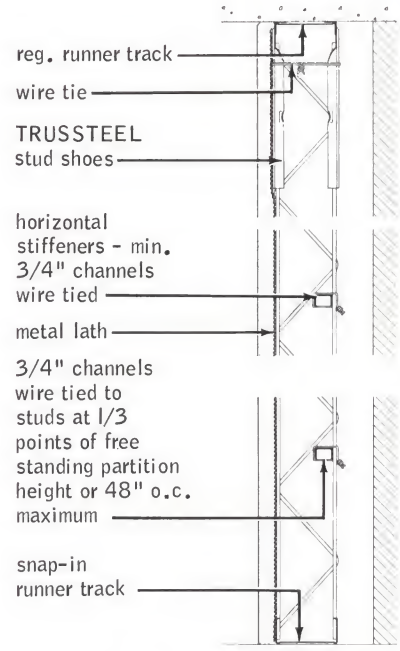
4. Bend excess of bracket down.



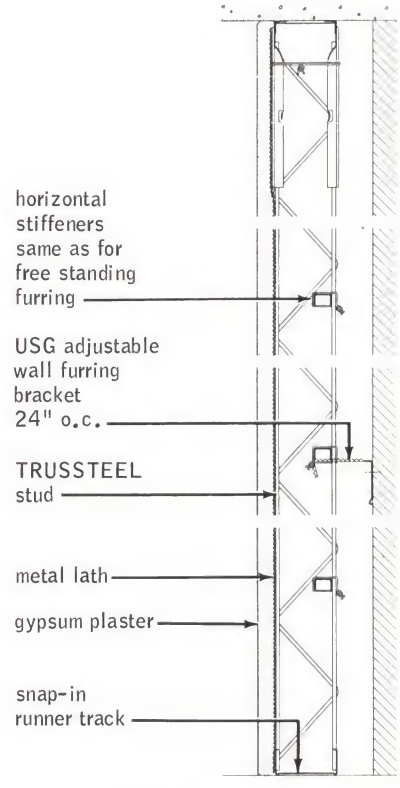
USG adjustable wall furring bracket



adjustable wall furring bracket and attachment to TRUSSTEEL studs



free standing furring



braced furring

specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *All fire-rated partitions require the TRUSSTEEL Stud attachment to the Regular or Snap-In Runner Track by the TRUSSTEEL Stud Shoes at the ceiling.*

3. *Snap-In Runner Track with studs cut accurately to length may be used for a floor and ceiling attachment where the construction is non fire-rated. This track may be used at the floor on fire-rated partitions.*

4. *A TRUSSTEEL Stud Partition used as a sound barrier must have caulking under the floor and ceiling runner track to seal the voids between track and structural slab. Eliminate cutting holes back to back or adjacent to each other such as electrical outlets. Use sand aggregate only.*

5. *Steel door frames should be fabricated from 16 gauge metal, minimum, shop primed. The opening at the trim return should be accurately formed to the overall thickness of the partition.*

Base plates, designed with two anchor holes to prevent rotation, should be securely attached to trim returns to dampen door impact vibrations. Floor anchorage should be by two power-driven anchors or equivalent per plate.

Four jamb anchors should be provided on each jamb, welded to the trim returns. *(See detail, page 5.)*

Grouting of the door frame is recommended on all installations and is required where heavy or oversize doors are used. The grout shall be raked out to allow the lath and plaster to be inserted into the frame. Under no conditions shall the lath and plaster terminate against the trim return of the door frame.

Door closers are recommended on all oversize doors and doors where the weight of the door (including attached hardware) exceeds 50 lbs.

6. *Lath and plaster surfaces (non-load bearing) will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that lath and plaster surfaces be isolated from all structural elements, and control joints be specified where:*

   a. *a partition abuts any structural element or dissimilar wall or ceiling assembly.*

   b. *the partition construction changes within the plane of the partition.*

In long partition runs, control joints should be provided no more than 30′ o.c. Door frames extending from floor to ceiling may be used as control joints. For doors less than ceiling height, control joints extending from the center or both corners of the frame to the ceiling may be used.

Where finished partitions join structural slabs, the plaster should be cut back or casings installed, and the intersection should be caulked.

7. *Holes cut in a thin lath or plaster membrane, such as door frames, borrowed lights, etc., cause a concentration of stresses in the plaster. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgement of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

8. *Where a plaster surface is flush with metal, metal bucks, metal windows, or metal base, the plaster should be grooved between the two materials.*

9. **Fixture attachment**—*Lightweight fixtures and trim should be installed using plastic plugs or other expandable anchors for screw attachment. Heavy fixture attachment is not recommended on resilient lath and plaster surfaces.*

Wood inserts for fixture attachment on non-resilient surfaces must always be wire-tied to the inside of the stud chord to prevent breaking up the stress skin of the lath and plaster.

10. **Ceramic Tile**—*Where ceramic tile is required, a portland cement-lime plaster may be applied in scratch and brown coats to ⅝″ grounds over metal lath as a base. Ceramic tile may also be adhesively attached over the finished gypsum plaster in accordance with adhesive manufacturer's specifications.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill., 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company.

- **a.** USG Regular Runner Track—widths 1⅝″, 2½″, 3¼″, 4″, or 6″ (see Note 2).
- **b.** USG Snap-In Runner Track—widths 1⅝″, 2½″, 3¼″ or 4″ (see Note 3).
- **c.** USG Combination Stud and Base Clip—available for 1⅝″, 2½″, 3¼″ or 4″ TRUSSTEEL Studs.
- **d.** TRUSSTEEL Studs—widths 1⅝″, 2½″, 3¼″, 4″, or 6″ (see Note 2).
- **e.** TRUSSTEEL Stud Shoes.
- **f.** No. 400 Resilient Clip.
- **g.** USG Stud Base Clip.
- **h.** USG Metal Base Splice Plate.
- **i.** USG Metal Base—2½″ (18) (20) ga.
- **j.** USG Corner Bead (specify style from page 2).
- **k.** USG Casing Bead (specify type from page 2).
- **l.** USG Base Screed (specify type from page 2).
- **m.** USG 8-A Picture Mould.
- **n.** USG Cold Rolled Channels ¾″, 1½″, 2″.
- **o.** 18 ga. tie wire.
- **p.** ¼″ Pencil Rods
- **q.** Metal Lath shall be 3.4 lb. (Diamond Mesh) (Z-Riblath) (⅜″ Riblath) 27″ x 96″.
- **r.** USG Adjustable Wall Furring Bracket.

stud system erection

TRUSSTEEL Studs shall be of the size shown on the plans or as herein specified, spaced not to exceed 16″ o.c. All partitions shall be aligned accurately according to the partition layouts.

Runner Tracks where required shall be securely attached:

1. **To concrete slabs**—Using concrete stub nail or power-driven anchors, spaced not to exceed 24″ o.c.

2. To ceiling grillage—Wire tie, using a double strand of 18 ga. tie wire, spaced not to exceed 16″ o.c.

3. To plaster or gypsum lath—Toggle bolt or staple, spaced not to exceed 24″ o.c.

Where a 2½″ Metal Base is being used, or where curved walls are indicated, (except where metal lath is wire-tied to both sides of studs) USG Combination Stud Base Clips may be used in lieu of runner track. Secure with concrete stub nails or power-driven anchors spaced not more than 16″ o.c.

Studs shall rest on the floor track and be cut to the nominal ceiling height. With Regular Runner Track and shoes, end of the studs shall be no more than 3″ from the ceiling; with Snap-In Runner Track, no more than ⅜″ from ceiling.

Studs shall be placed vertically, engaging runner tracks or USG Combination Stud Base Clips. Studs shall be secured to runner tracks at floor and ceiling with a pair of shoes, crimped or wire tied in place using a double strand of 18 ga. tie wire. Two wire ties of double strand 18 ga. wire shall be used at all studs immediately adjacent to door frames or borrowed light frames.

wall furring erection

On partitions designated as vertical furring the back chord of the TRUSSTEEL Stud must be bridged using continuous ¾″ channels at the third points or not to exceed 48″ o.c. and at mid-height. The channels to be saddle-tied at each stud.

Braced furring requires a rigid, secure attachment at 24″ o.c. along the mid-point bridging channel to the masonry back-up.

USG Adjustable Wall Furring Brackets, with serrated edges up, shall be attached to the masonry walls at mid-height of the furred wall and spaced not over 4″ from columns or other abutting construction and not over 24″ o.c. horizontally and 48″ o.c. vertically, and as required above and below windows, using (one 2″ cut nail in mortar joints or brick clay tile, or cement block or in the field of light-weight aggregate blocks) (⅝″ concrete stub nails or power driven nails or other suitable fasteners in monolithic concrete). Fastenings shall be driven through top hole of bracket. The mid-height furring channels shall be laid horizontally on the furring brackets with the legs down, and wire-tied to the bracket with a double strand of 18 ga. tie wire. Excess bracket length shall be bent down.

door frames

Studs shall be inserted into the steel door frame, nested in the notches of the jamb anchor clips, and each chord of the stud securely wire-tied at each side of each jamb anchor. A second stud shall be installed on each side of the door frame, approximately 2″ from the strut stud.

Two ¾″ cold rolled channels shall be used over the head of the door, extending out to engage the third stud on each side. These aligning channels shall be securely tied to the inside of the stud chord at each intersection.

direct plaster base attachment

Metal lath shall be applied with the long dimension of the sheet across the supports. Riblath shall be applied with the rib projections against the support.

The ends of all lath shall be lapped not less than 1″. If end laps are made between supports,they shall be adequately laced or tied with 18 ga. tie wire. The sides of diamond mesh lath shall be lapped not less than ½″. The sides of riblath shall be lapped by nesting outside ribs, and shall be wire-tied to every support, and between supports not to exceed 9″ intervals. All metal lath shall be placed so that the lower sheets overlap the upper sheets. Wherever possible, ends of lath in adjacent courses shall be staggered.

Metal lath shall be secured to all supports, except those covered in subsequent sections, with 18 ga. tie wire at intervals not exceeding 6″.

At all interior angles, metal lath shall be formed into the corners and carried out onto the abutting surface, and adequately secured.

resilient plaster base attachment

Resilient Clip No. 400 shall be snapped over the chord of the TRUSSTEEL Stud, spaced not to exceed 16″ o.c. with a clip located not more than 4″ from the floor and ceiling. ¼″ Pencil Rods of ceiling height length shall be snapped into the small loop of the 400 Clip.

3.4 lb. Diamond Mesh Metal Lath shall be applied with the long dimension of the sheet across the supports.

(*To complete specification add last three paragraphs from "direct plaster base attachment" above.*)

lathing accessories

a. Metal Base 2½ inch, (18) (20) ga., painted, shall be notched to a neat miter in forming all angles. In continuous runs, ends shall be evenly butted and internally spliced with a splice plate. Base shall be securely held in place by engaging the base clips.

b. Metal Corner Bead No. (000000) shall be provided on all external plaster corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. Fasten securely with wire-ties, etc., spaced not over 8″ o.c.; stagger in two wings.

c. Casing Bead No. (000000) shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed. Wire-tie in place.

d. Base Screed No. (000000) shall be installed 6″ above the finish floor, unless otherwise indicated. Set screeds level, true to line, in lengths as long as practical, with joints aligned with a suitable splice. Wire-tie in place.

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partitions

a

1186

TRUSSTEEL* Studs and ROCKLATH*

PLASTER BASE

A.I.A. File No. 20-B-2

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
2 hrs.	Stl Stud—Gypsum Lath & Plaster—2½" TRUSSTEEL studs 16" o.c.—⅜" perf ROCKLATH—¾" 100:2-100:2 gypsum perlite plaster wt 11 width 5"	T-1813-GA-OSU (f)	N/A		132	Excellent fire rating at a low cost	a-1186
N/A	Stl Stud—Resil Gypsum Lath & Plaster—3¼" TRUSSTEEL studs—TR-1 clips one side—⅜" ROCKLATH—½" gypsum sand plaster—perimeter caulked wt 14 width 5½"	USG-104-FT-G&H (s)	55		136	Excellent sound barrier cost value	a-1186
1 hr. est	Stl Stud—Resil Gypsum Lath& Plaster—3¼" TRUSSTEEL studs 8" o.c.—2" THERMAFIBER sound atten blkts—TR-1 clips att at every second stud alternating ea side—⅜" ROCKLATH—½" 100:2 gypsum sand plaster—perimeter caulked wt 17½ width 5¾"	USG-133-FT-G&H (s) Field test KSO-1090072-c (s)	56 48		185	Est. fire rating based on perf. ROCKLATH. No outlets in 133-FT test; 2 caulked outlets ea. side in field test	a-1186
1 hr. est	Stl Stud—Resil Gypsum Lath & Plaster—3¼" TRUSSTEEL Studs 16" o.c.—2" THERMAFIBER sound atten blkts—TR-1 clips one side—⅜" ROCKLATH—½" 100:2-100:2 gypsum sand plaster—perimeter caulked wt 14 width 5½"	USG-125-FT-G&H (s) GA-2-3-4-FT-G&H (s) Field Test KSO-1090072-b (s)	49 50 47		150	Est. fire rating based on perf. ROCKLATH. 2 caulked outlets on ea. side in field test	a-1186
1 hr.	Stl Stud—Resil Gypsum Lath & Plaster—2½" TRUSSTEEL studs 16" o.c.—TR-1 clips—⅜" perf ROCKLATH—½" 100:2 gypsum sand plaster—perimeter caulked wt 13 width 4½"	UL Des 24-1 hr (f) Field Test KSO-1090071-b (s)	48		138	Sound test with 6 caulked outlets on 2 sides of assembly	a-1186
1 hr.	Stl Stud—Resil Gypsum Lath & Plaster—1⅝" TRUSSTEEL studs 16" o.c.—TR-1 clips—⅜" perf ROCKLATH—½" 100:2-100:2 gypsum sand plaster wt 13 width 4⅛"	T-1559-OSU (f) USG-20-FT-G&H (s)	47		131	Can improve performance with sound attenuation wool	a-1186
1 hr.	Stl Stud—Gypsum Lath & Plaster—2½" TRUSSTEEL studs 16" o.c.—⅜" perf ROCKLATH—7/16" 100:2-100:2 gypsum sand plaster wt 13 width 4½"	T-309-OSU (f) TL-58-7 (s)	41		125	Record of proven performance	a-1186
1 hr.	Stl Stud—Gypsum Lath & Plaster—1⅝" TRUSSTEEL studs 16" o.c.—⅜" perf ROCKLATH—½" 100:2-100:2 gypsum sand plaster wt 13 width 3⅝"	T-887-OSU (f) TL-58-7 (s)	41		123	Good alternate for most solid partitions	a-1186

For wall furring application see page 9.

description

These partition assemblies consist of ROCKLATH Plaster Base, either plain or perforated types, attached to open-web TRUSSTEEL Studs. The lath is either directly fastened to the stud or resiliently attached by means of USG® Resilient Clips. By using these specially designed resilient clips, the two lath and plaster diaphragms are not rigidly coupled to the studs or each other. The excellent sound-isolative efficiency of this system results from this resilient mounting of the plaster membranes and the column of air formed within the TRUSSTEEL Studs (see table above).

TRUSSTEEL Studs utilize a truss design for superior strength, are fabricated in five stud widths (see table at right) and mill cut to job lengths. Studs are attached to the floor and ceiling by means of clips or runner tracks and stud shoes.

ROCKLATH, a gypsum core faced on both sides with special paper, forms a rigid base for the economical application of gypsum plasters. For this assembly, ROCKLATH is ⅜" thick, available in two types, (Perforated or Plain) and two sizes (see Specifications, page 10). In perforated ROCKLATH, ¾" round holes are punched through the lath 4" o.c. in each direction. This provides a mechanical key in addition to the plaster bond, and generally obtains a higher fire resistance rating than with Plain ROCKLATH Plaster Base (see table above).

function and utility

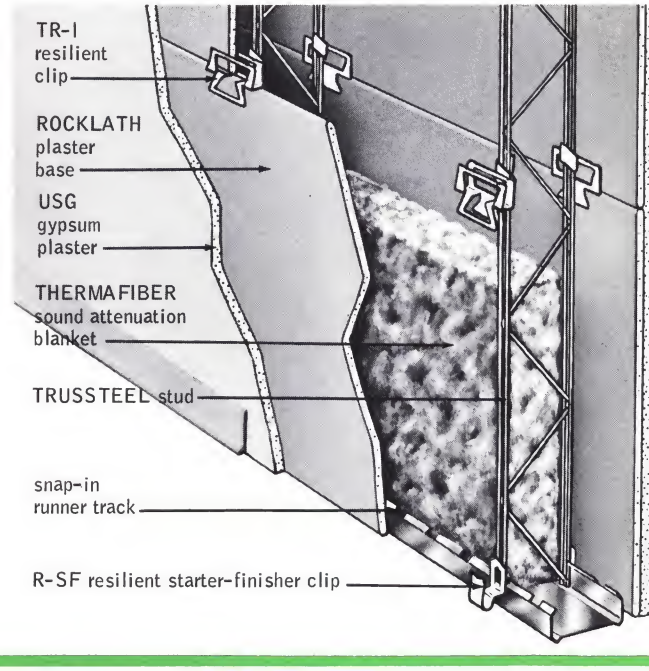
The open web of the truss design provides a maximum of free space for encasing pipes, conduits or ducts, horizontally, vertically or diagonally, without impairing the structural integrity of the assembly.

Sound Isolation—Very good sound isolation at a low cost. Where greater sound isolation is needed, THERMAFIBER *Insulating Wool Blankets can be inserted in the space between studs.

Fire Protection—Incombustible components provide systems with 1-hour and 2-hour fire-resistance ratings (see table above).

Strength—TRUSSTEEL Studs are formed of No. 7 gauge cold drawn wire, with a tensile strength of 90,000 psi. The resistance moment computed on the section modulus with the high tensile strength produces an exceptionally strong non-load bearing steel stud.

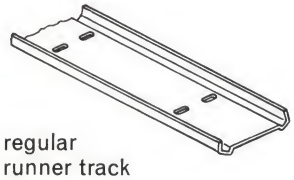
(continued on page 10)



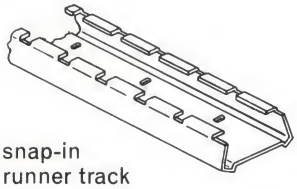
A.I.A. File No. 20-B-2

*Reg. U.S. Pat. Off.

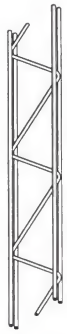
components



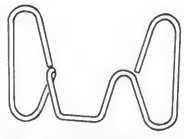
regular
runner track



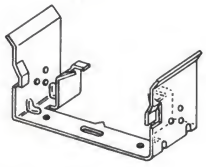
snap-in
runner track



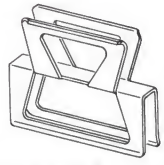
TRUSSTEEL stud



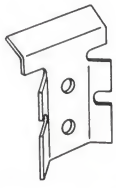
TL-1 TRUS-LOK*
field clip



USG combination
stud & base clip

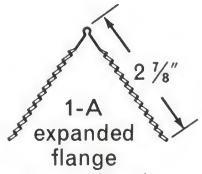


BRIDJOINT* clip B-1

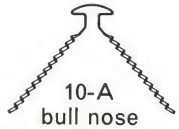


USG stud base clip

USG metal base
splice plate



1-A
expanded
flange
corner bead



10-A
bull nose
expanded flange
corner bead

see "plaster bases" product catalog for full description on accessories & sizes

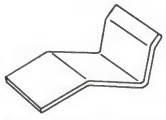
USG
4-R
expanded
flange
corner bead

5-A
bull nose
corner bead

3-A
expanded
base screed

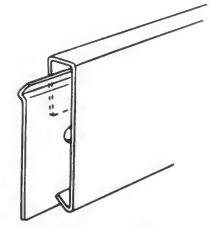
TRUSSTEEL
stud shoe

TL-2 TRUS-LOK
starter clip



TRUS-LOK drive-in
starter clip

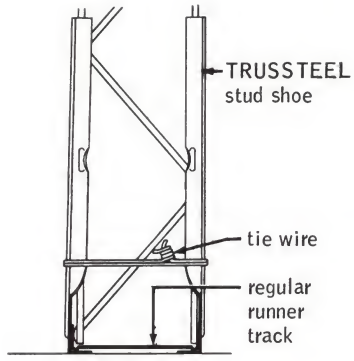
1" #12 SM screw

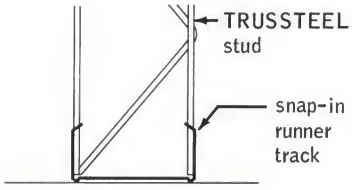


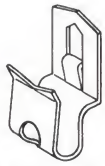
USG metal base
& splice plate

USG
6-A
plain
base
screed

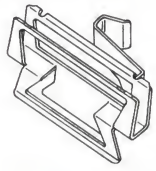
USG 7-A
curved point
base screed





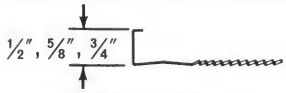


R-SF resilient
starter-finisher

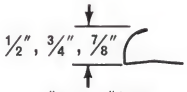


TR-1 resilient
stud clip

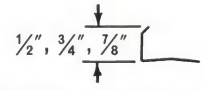
USG casing beads
(expanded or short flange)



#66 square edge



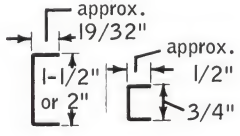
#4 or #138
quarter round



#60 semi-square edge

USG
8-A
picture
mould

USG
selv-edge
cornerite



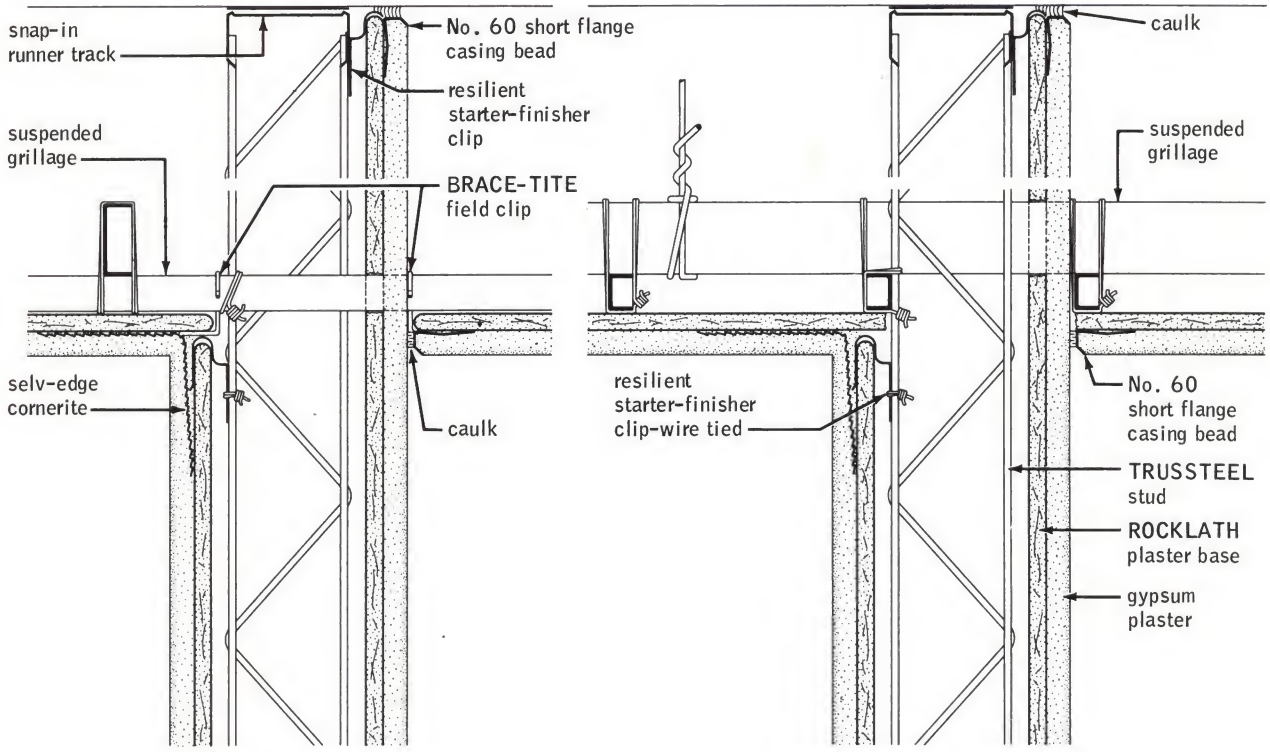
USG cold
rolled channels

*Reg. U.S. Pat. Off.

details/resilient attachment

ceiling attachments

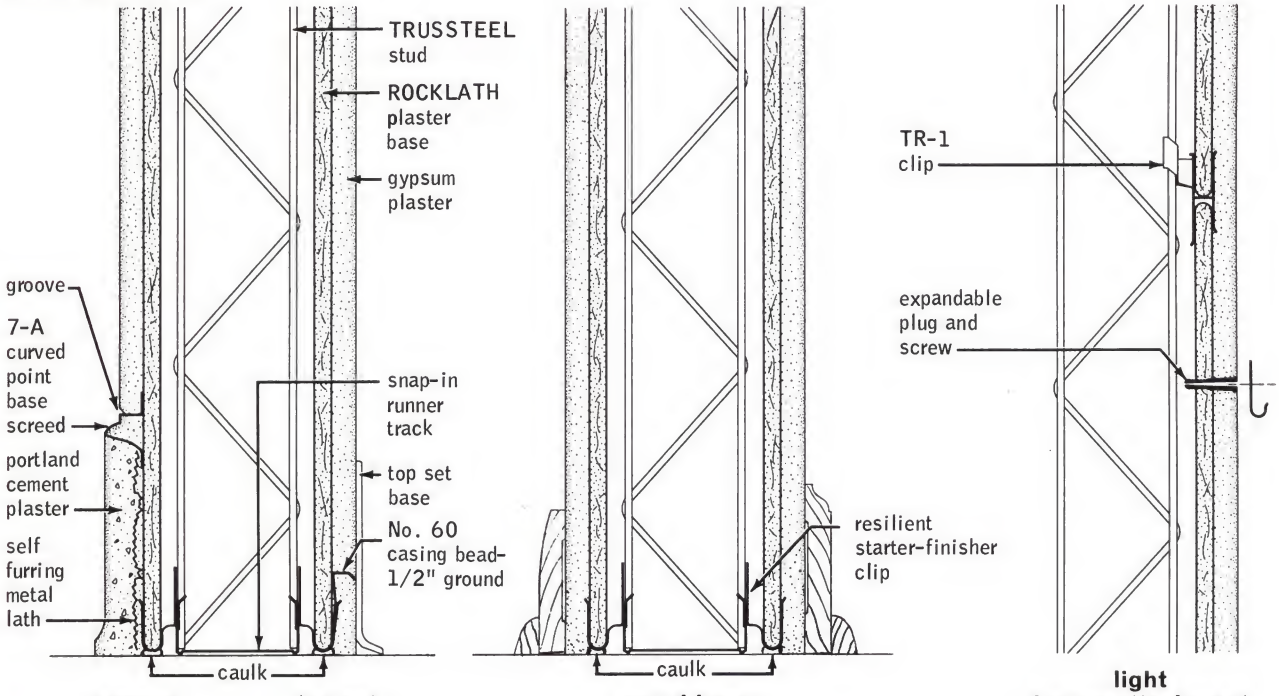
scale: 3″ = 1′-0″



cross section transverse to furring channel

cross section parallel to furring channel

floor attachment



cement top set

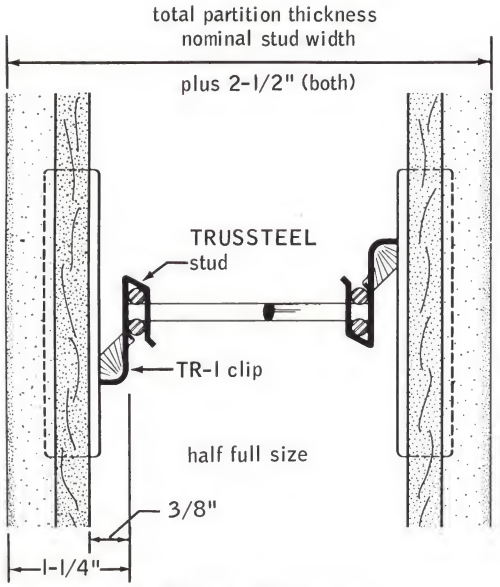
wood base

light fixture attachment

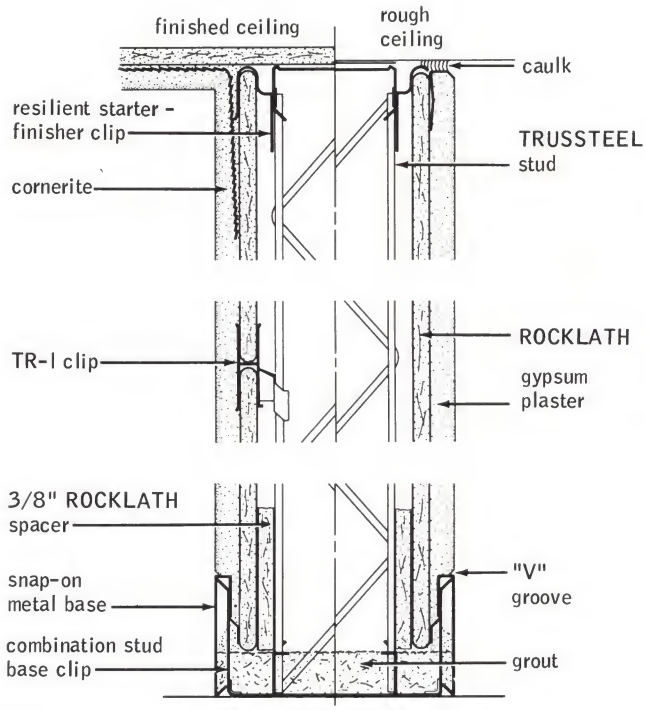
*Reg. U.S. Pat. Off.

details

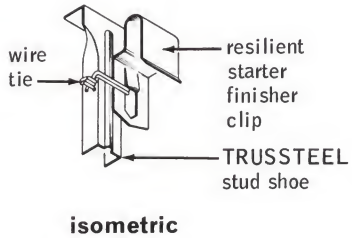
scale: 3″ = 1′-0″



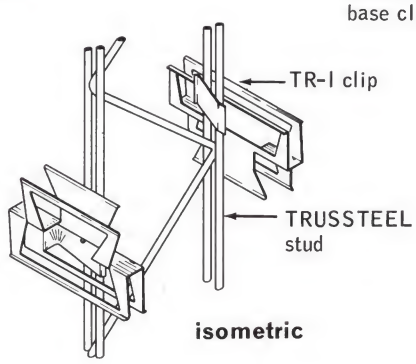
resilient attachment of ROCKLATH plaster base



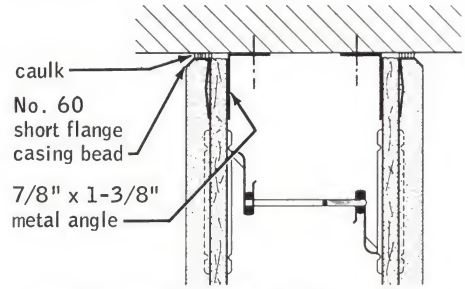
resilient TRUSSTEEL stud



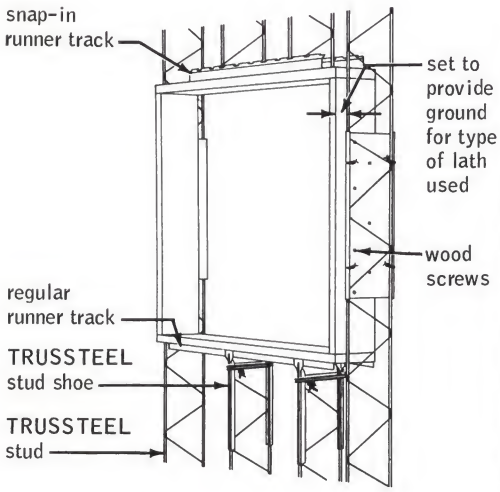
isometric



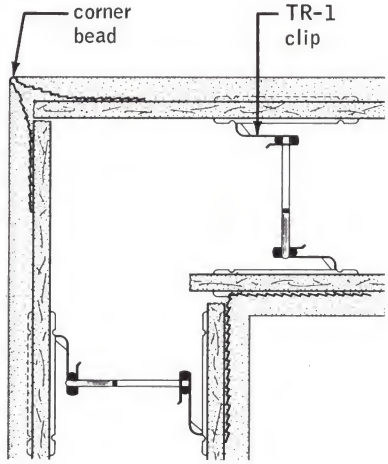
isometric



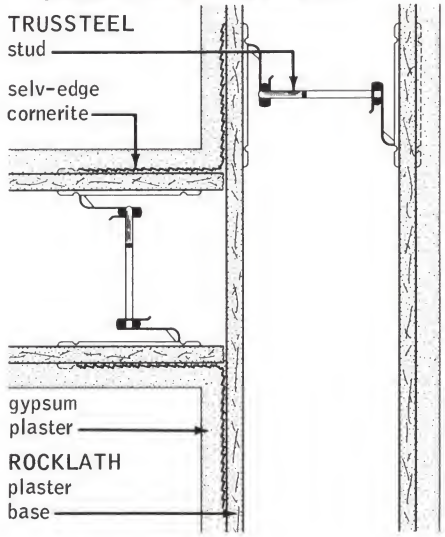
partition wall intersection



borrowed light or cabinet frame



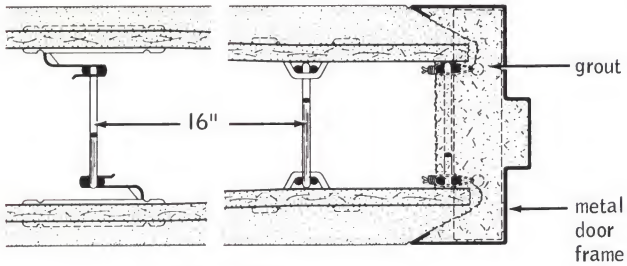
corner



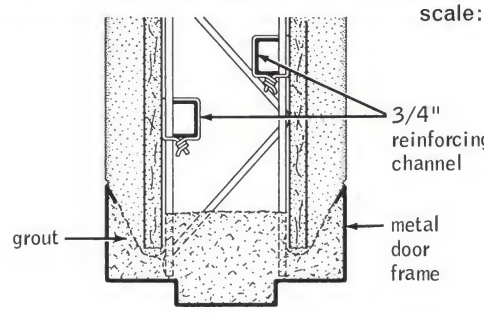
partition intersection

details

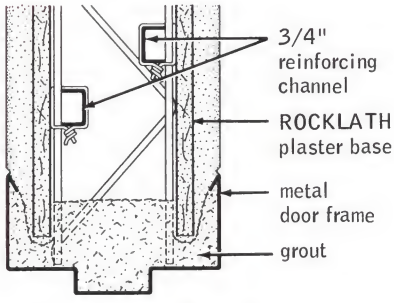
scale: 3" = 1'-0"



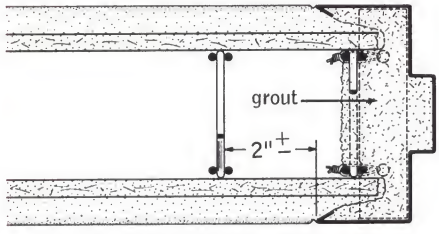
jamb section resilient partition



head section resilient partition

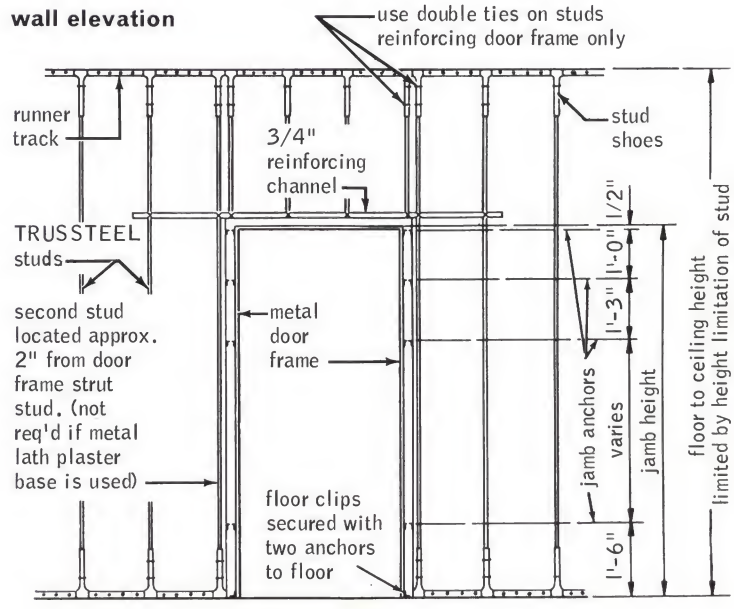


head section direct attachment

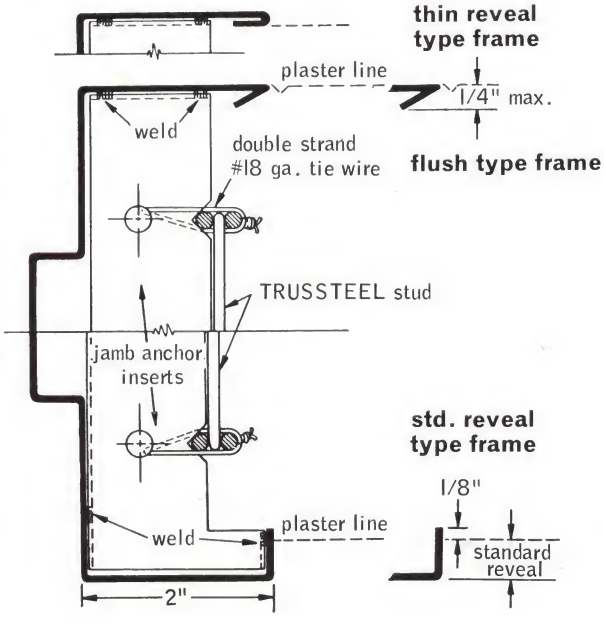


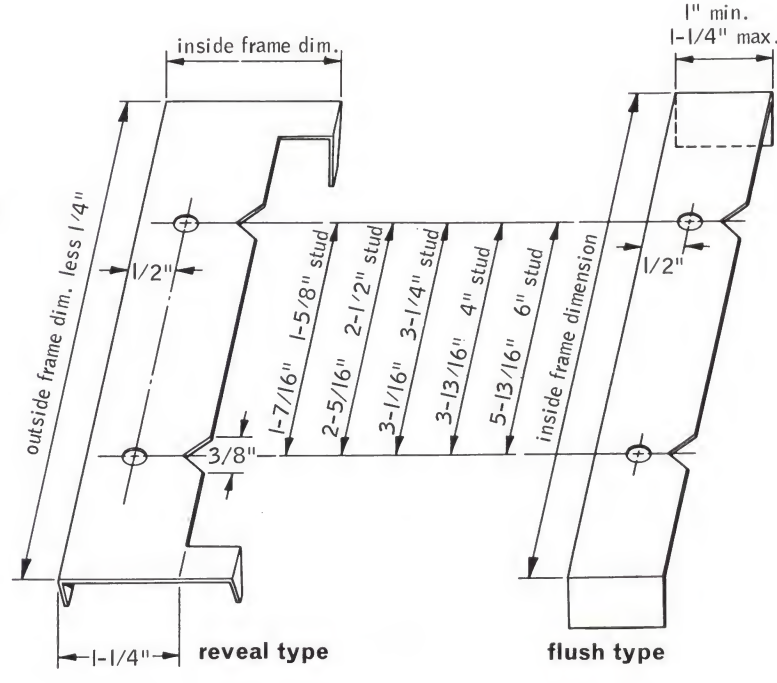
jamb section direct attachment

wall elevation



jamb anchor inserts/half size

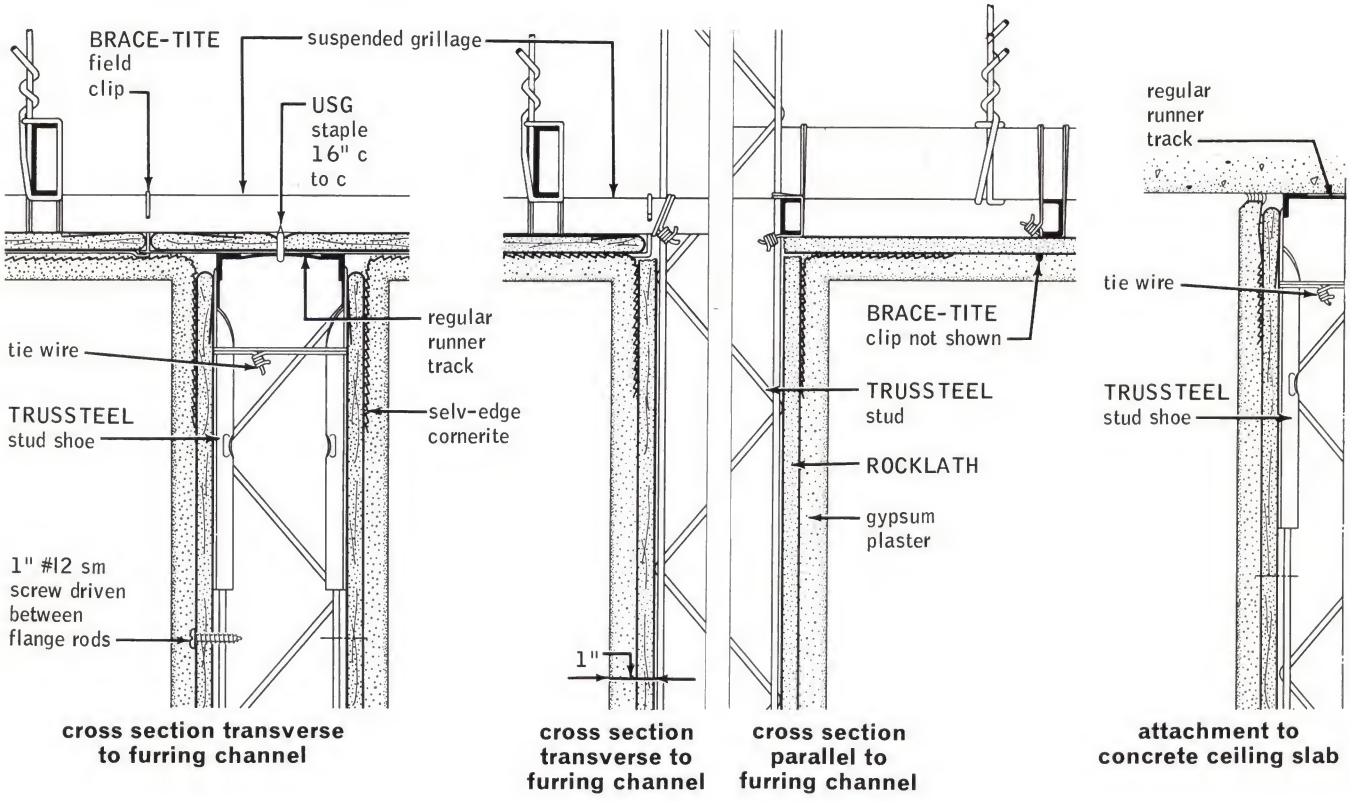




*Reg. U.S. Pat. Off.

details/direct attachment

scale: 3″ = 1′-0″



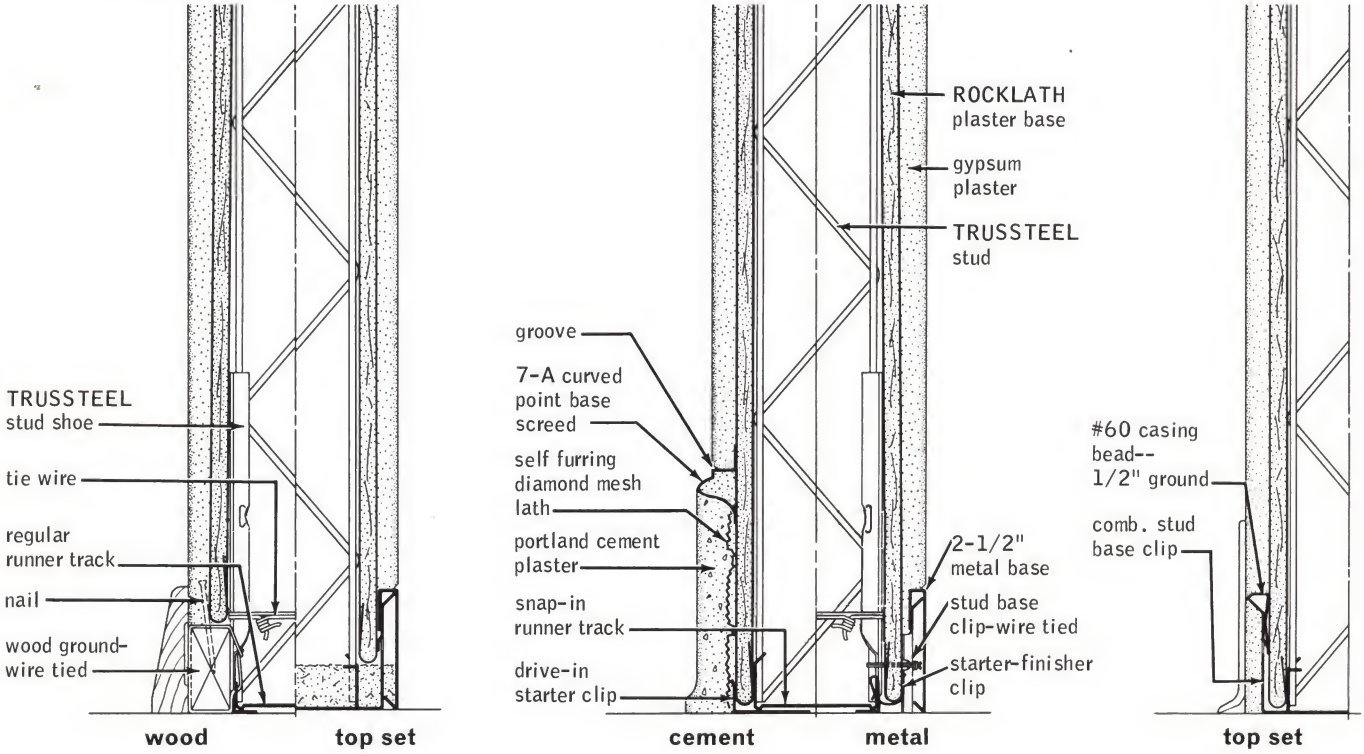
cross section transverse to furring channel

cross section transverse to furring channel

cross section parallel to furring channel

attachment to concrete ceiling slab

floor attachments



wood **top set**

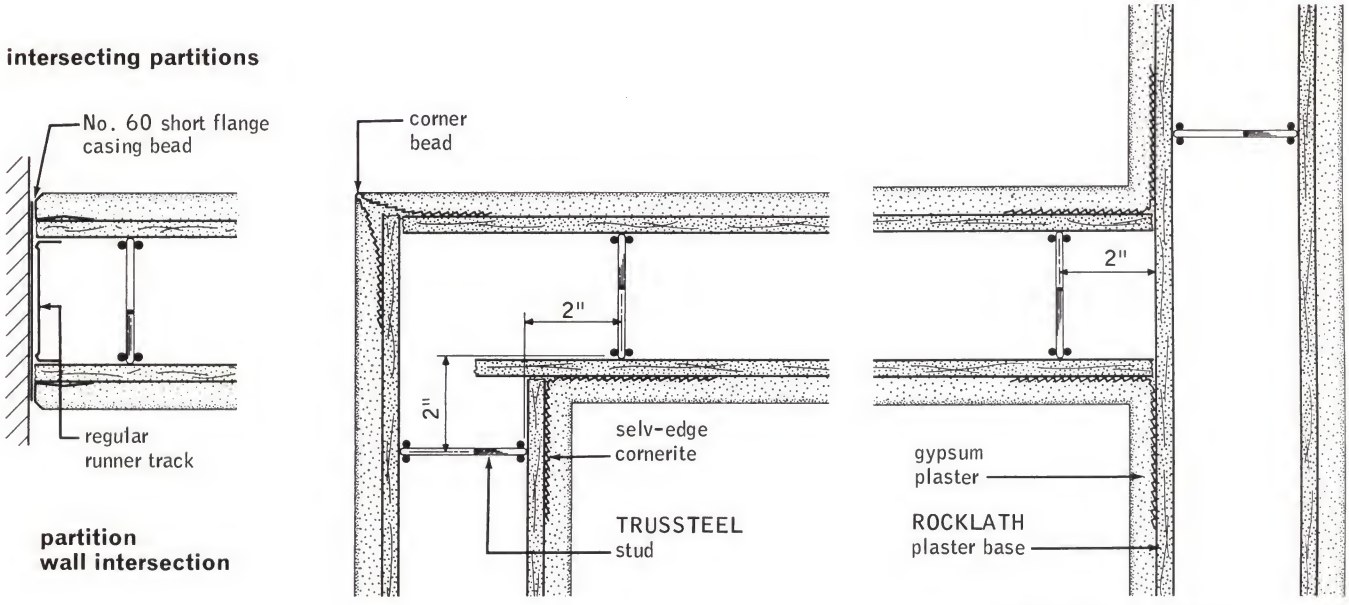
cement **metal**

top set

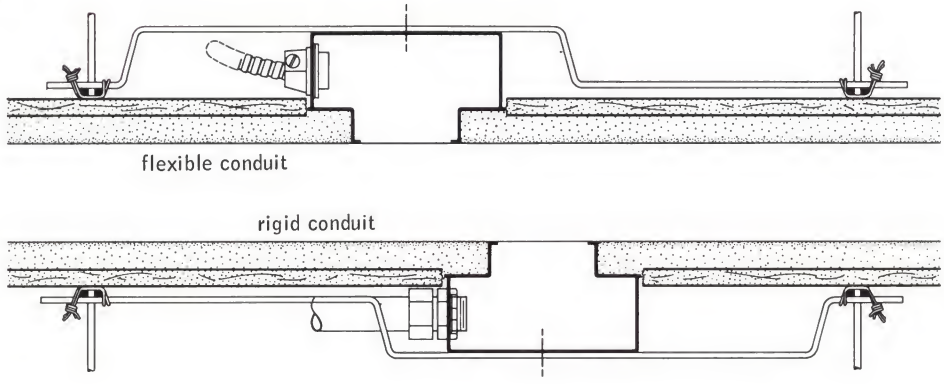
details/direct attachment

scale: 3″ = 1′-0″

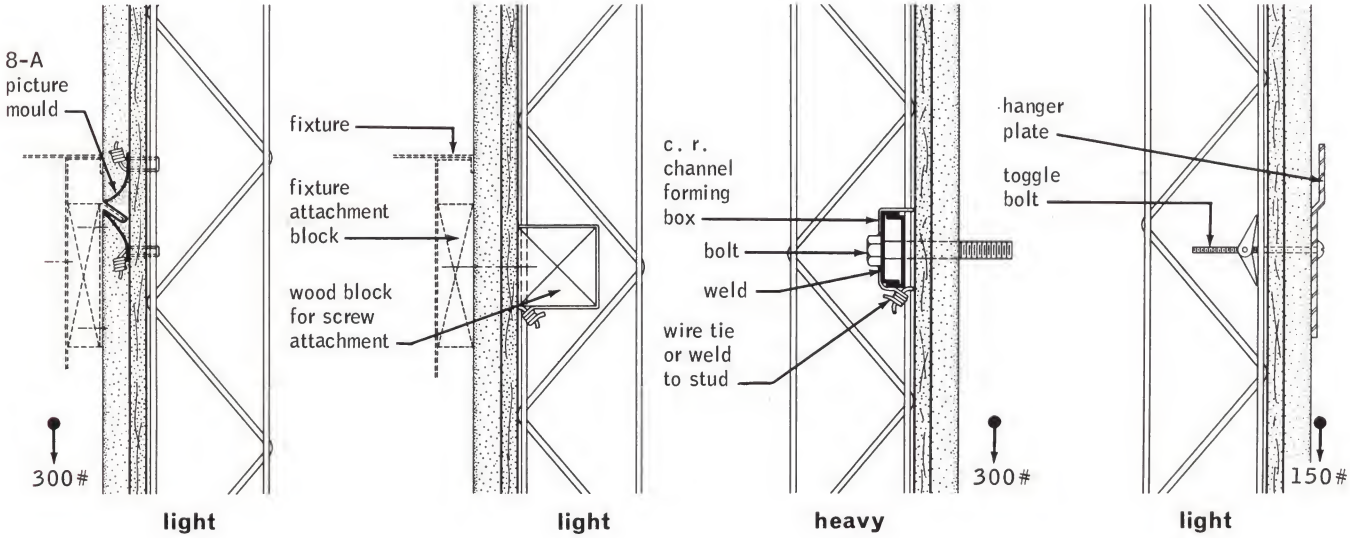
intersecting partitions



electrical outlets



fixture attachments



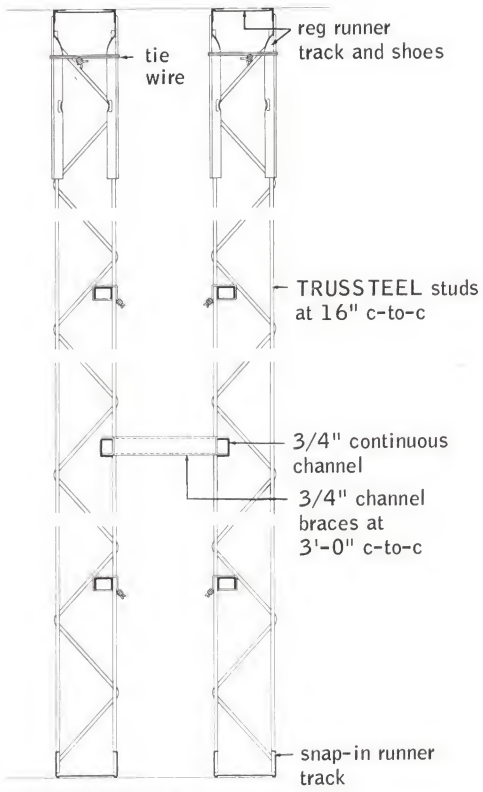
*Reg. U.S. Pat. Off.

core walls

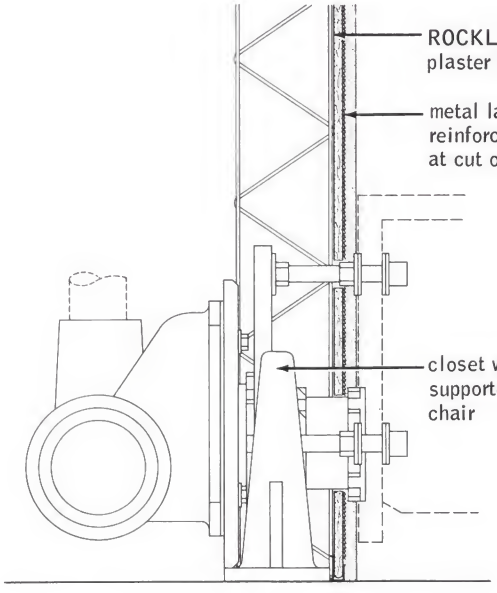
scale: 1½ = 1′-0″

Core walls, as vertical shafts encasing the usual plumbing supply and waste lines, vent ducts and electrical conduits, require more free space than can be provided within the usual partition assembly.

Core walls are easily constructed using TRUSSTEEL Studs and ROCKLATH, provided proper bracing is used to compensate for the stress skin action of the one side. The non-lathed side of the studs should be braced with ¾″ continuous channel girts at the quarter points vertically or 48″ o.c. maximum, and ¾″ channel bracket mid-girts spaced 36″ o.c. horizontally.

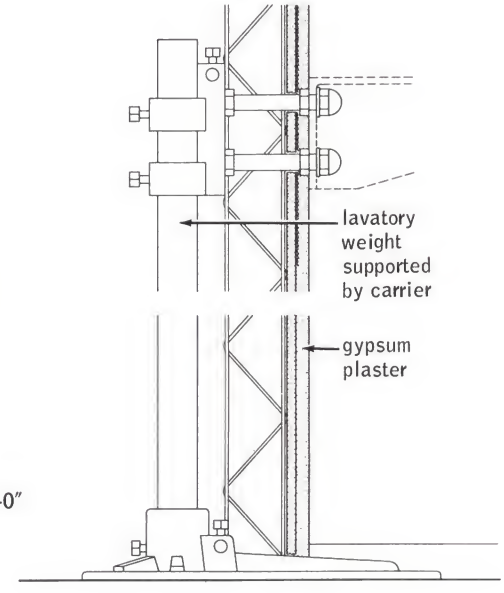


TRUSSTEEL stud core wall



closet carrier

scale: 1½ = 1′-0″



lavatory carrier

exterior wall furring

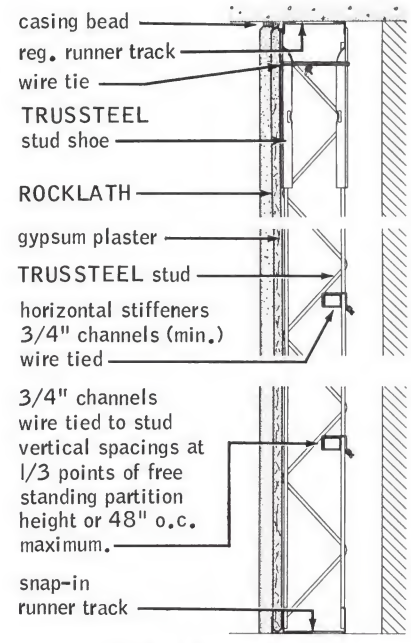
description	relative cost index	comments	folder reference
TRUSSTEEL Studs 16″ o.c. cross braced 4′ o.c. on the back chord, ⅜″ Insulating ROCKLATH attached with TL-1 Clips, ½″ sanded basecoat plaster, lime putty finish	185	Free standing; allows for pipe chase clearance	a-1186

It is recommended that all exterior masonry walls be furred. Asphaltic or bituminous bonding agents are not recommended as a plaster base. TRUSSTEEL Studs, ROCKLATH and plaster provide an exterior wall furring system that offers a maximum free space for encasement of pipes, ducts or conduits and a finished, readily decorated interior wall surface.

This construction consists of TRUSSTEEL Studs as vertical members braced with horizontal ¾″ channels. A channel at the mid-point between the floor and ceiling is attached to the wall with USG Adjustable Wall Furring Brackets not more than 24″ o.c. horizontally. TRUSSTEEL Studs spaced 16″ o.c. are wire-tied to these horizontal channels. ⅜″ ROCKLATH, 16″ x 96″, is clipped to the TRUSSTEEL Studs and plastered to ½″ grounds. The Adjustable Wall Furring Brackets and extra channel at mid-height may be omitted to obtain free-standing furring.

TRUSSTEEL stud size	maximum height[1]	
	braced furring	free-standing furring
1⅝″	9′	6′
2½″	15′	10′
3¼″	21′	14′
4″	22′	15′
6″	26′	17′

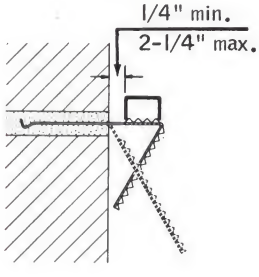
(1) Based on 16″ spacing between studs.

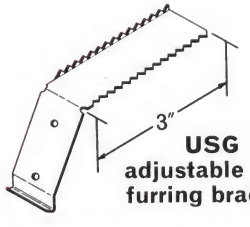


free standing furring

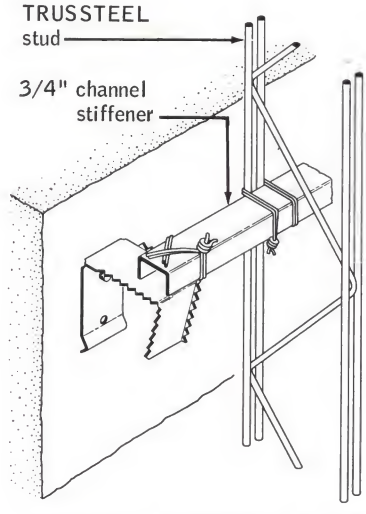
adjustable wall furring brackets

1. Attach wall furring brackets not more than 24″ o.c. horizontally and 48″ o.c. vertically.
2. After attachment, bend bracket to horizontal position.
3. Wire-tie plumbed channel to bracket ¼″ min. (2¼″max.) from wall.
4. Bend excess of bracket down.

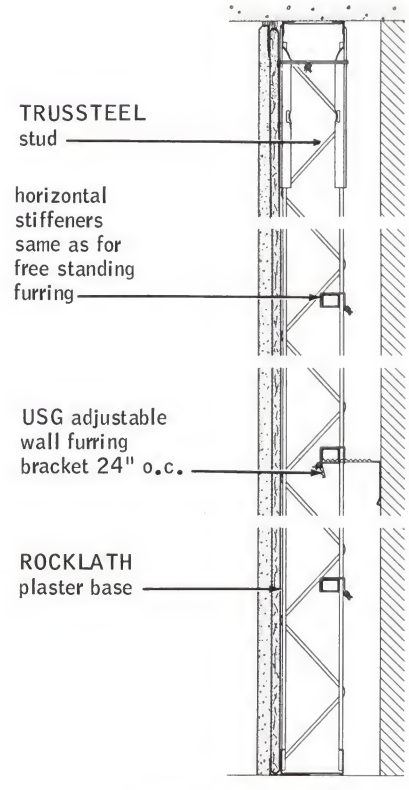




USG adjustable wall furring bracket



adjustable wall furring bracket and attachment to TRUSSTEEL studs

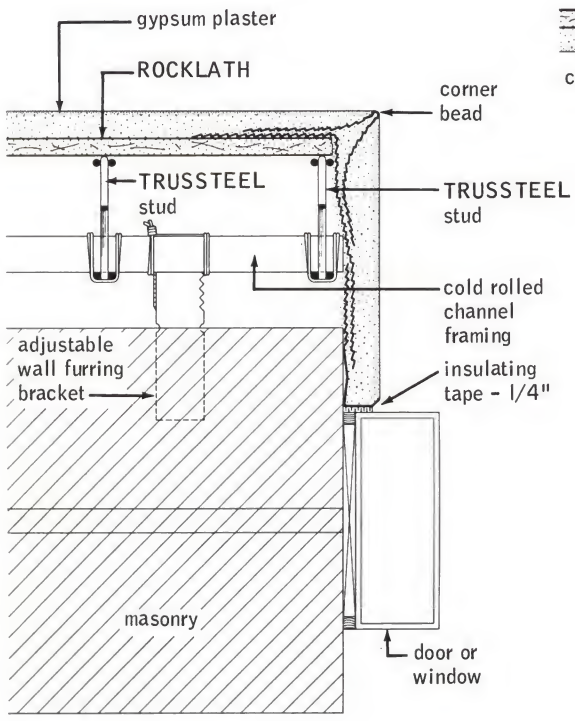


braced furring

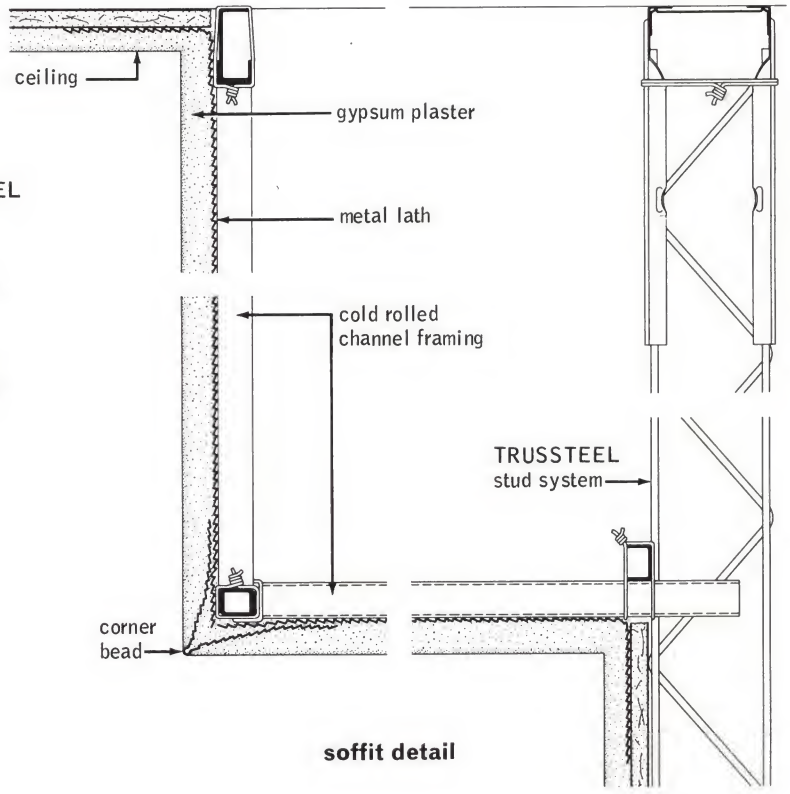
*Reg. U.S. Pat. Off.

details/specifications

scale: 3″ = 1′-0″



furred wall jamb return



soffit detail

(continued from page 1)

Economical—The structural integrity, the strength, the sound isolation, the open core wall and fire protection are provided by TRUSSTEEL Stud partitions at a lower cost than by other incombustible assemblies.

Performance—TRUSSTEEL Studs have been used since 1933 and now account for the majority of all non-load bearing steel studs used nationally. The continued high level of use indicates their acceptance based on their performance.

limitations

1. A non-load bearing partition.

2. Stud spacing limited to 16″ o.c. (See table for limiting heights.)

3. Door frames must be fabricated and anchored to prevent twisting and impact vibration (see details, page 5).

4. To retain maximum sound isolation, precautions must be taken to prevent sound leakage (see Specifications, below).

5. Where mechanically suspended acoustical tile ceilings are used, finished partitions should extend from structural slab to structural slab, closing all openings.

finished partition thickness—limiting heights

stud width	section modulus	direct attach.	resil. attach.	max. partition heights studs 16″ o.c.
1⅝″	.0635″³	3⅝″	4⅛″	9′
2½″	.1056″³	4½″	5″	15′
3¼″	.1420″³	5¼″	5¾″	21′
4″	.1825″³	6″	6½″	22′
6″	.277″³	8″	8½″	26′

specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55° F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *16″ x 96″ ROCKLATH Plaster Base is preferred on all TRUSSTEEL Stud installations, and particularly over door frames or other openings.*

3. *All fire-rated partitions require that TRUSSTEEL Studs be attached to the Regular or Snap-In Runner Track with TRUSSTEEL Stud Shoes at the ceiling.*

4. *Snap-In Runner Track with studs cut accurately to lengths may be used for floor and ceiling attachment where the construction is non fire-rated. This track may be used at the floor on fire-rated partitions.*

5. *A TRUSSTEEL Stud Partition used as a sound barrier must have a resilient gasket or caulking under the floor and ceiling runner track to seal the voids between track and structural slab. Eliminate cutting holes back to back or adjacent to each other such as electrical outlets. Use sand aggregate only. Caulk perimeter of ROCKLATH and seal electrical boxes.*

6. *THERMAFIBER Sound Attenuation Blankets, stapled to*

sound attenuation factors

test no.	method	decibel frequency in cps										STC
		125	175	250	350	500	700	1000	1400	2000	2800	4000	
USG-20 FT-G&H	Lab	30	33	37	41	47	50	54	54	45	53	52	47
KSO-1090072-c	Field	33	38	45	47	48	52	53	48	48	53	60	48
USG-125 FT-G&H	Lab	35	49	49	52	56	56	59	49	48	54	60	49
KSO-1090072-b	Field	35	37	46	46	48	53	55	47	47	54	60	47
USG-133 FT-G&H	Lab	40	45	51	50	57	57	60	59	59	62	63	56

the inside face of the ROCKLATH, will improve the sound classification. (See USG Folder on Insulating Wool Products.)

7. *Steel door frames should be fabricated from 16 gauge metal, minimum, shop primed. The opening at the trim return should be accurately formed to the overall thickness of the partition.*

Base plates, designed with two anchor holes to prevent rotation, should be securely attached to trim returns to dampen door impact vibrations. Floor anchorage should be by two power driven anchors or equivalent per plate.

Four jamb anchors should be provided on each jamb, welded to the trim returns. (See detail page 5.)

Grouting of the door frame is recommended on all installations and is required where heavy or oversize doors are used. The grout shall be raked out to allow the lath and plaster to be inserted into the frame. Under no conditions shall the lath and plaster terminate against the trim return of the door frame.

Door closers are recommended on all oversize doors and doors where the weight of the door (including attached hardware) exceeds 50 lbs.

8. *Lath and plaster surfaces (non-load bearing) will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that lath and plaster surfaces be isolated from all structural elements, and control joints be specified where:*

a. *a partition abuts any structural element or dissimilar wall or ceiling assembly.*

b. *the partition construction changes within the plane of the partition.*

In long partition runs without openings, control joints should be provided no more than 60′ o.c. Door frames extending from floor to ceiling may be used as control joints. For doors less than ceiling height, control joints extending from the center or both corners of the frame to the ceiling may be used.

9. *Holes cut in a thin lath and plaster membrane, such as door frames, borrowed lights, etc., cause a concentration of stresses in the plaster. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

10. *Where a plaster surface is flush with metal, metal bucks, metal windows, or metal base, the plaster should be grooved between the two materials.*

11. *Fixture attachment—Lightweight fixtures and trim shall be installed by drilling set dry plaster to a minimum depth of ¾″ and inserting plastic plugs or other expandable anchors for screw attachment. Heavy fixture attachment is not recommended on resilient lath and plaster surfaces.*

Wood inserts for fixture attachment on non-resilient surfaces must always be wire-tied to the inside of the stud chord to prevent breaking up the stress skin of the lath and plaster.

12. *Ceramic tile surfaces where required may be installed:*

a. *By changing the plaster base from ROCKLATH to Metal Lath (see separate USG Systems Folder).*

b. *By adhesive application over the level brown coat gypsum plaster in accordance with the adhesive manufacturer's specifications.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill. 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company.

a. USG Regular Runner Track — widths 1⅝″, 2½″, 3¼″, 4″, or 6″ (see Note 3).

b. USG Snap-In Runner Track—widths 1⅝″, 2½″, 3¼″, or 4″ (see Note 4).

c. USG Combination Stud and Base Clip—available for 1⅝″, 2½″, 3¼″ or 4″ TRUSSTEEL Studs.

d. TRUSSTEEL Studs—widths 1⅝″, 2½″, 3¼″, 4″, or 6″ (see Note 3).

e. TRUSSTEEL Stud Shoes.

f. R-SF Resilient Starter—Finisher Clip.

g. TRUS-LOK* Drive-in Starter Clip.

h. TR-1 Resilient Field Clip.

i. TL-1 TRUS-LOK Field Clip.

j. BRIDJOINT* B-1 Field Clip.

k. USG Stud Base Clip.

l. USG Metal Base Splice Plate.

m. USG Metal Base—2½″ (18) (20) ga.

n. USG Corner Bead (specify style from page 2).

o. USG Self-Furring Junior Diamond Mesh Metal Lath.

p. USG Selv-edge Cornerite (2″ x 2″) (3″ x 3″).

q. USG Striplath.

r. USG Casing Bead (specify type from page 2).

s. USG Base Screed (specify type from page 2).

t. USG 8-A Picture Mould.

u. USG Adjustable Wall Furring Bracket.

v. USG Cold Rolled Channels ¾″, 1½″, 2″.

w. 18 ga. tie wire.

x. ROCKLATH Plaster Base shall be (⅜″ x 16″ x 48″) (⅜″ x 16″ x 96″) regular or perforated.

stud system erection

TRUSSTEEL Studs shall be of the size shown on the plans or as herein specified, spaced not to exceed 16″ o.c. All partitions shall be aligned accurately according to the partition layouts.

Runner Tracks where required shall be securely attached:

1. To concrete slabs—Using concrete stub nail or power driven anchors, spaced not to exceed 24″ o.c.

2. To ceiling grillage—Wire tie, using a double strand of 18 ga. tie wire, spaced not to exceed 16″ o.c.

3. To plaster or gypsum lath—Toggle bolt or staple, spaced not to exceed 24″ o.c.

Where a 2½″ Metal Base is being used, USG Combination Stud Base Clips may be used in lieu of runner track. Secure with concrete stub nails or power driven anchors spaced not more than 16″ o.c.

*Reg. U.S. Pat. Off.

Studs shall rest on the floor track and be cut to the nominal ceiling height. With Regular Runner Track and shoes, end of the studs shall be no more than 3″ from the ceiling; with Snap-In Runner Track, no more than ⅜″ from ceiling.

Studs shall be placed vertically, engaging runner tracks or USG Combination Stud Base Clips. Studs shall be secured to runner tracks at floor and ceiling with a pair of shoes, crimped or wire-tied in place using a double strand of 18 ga. tie wire. Two wire ties of double strand 18 ga. wire shall be used at all studs immediately adjacent to door frames or borrowed light frames.

wall furring erection

On partitions designated as vertical furring the back chord of the TRUSSTEEL Stud must be bridged using continuous ¾″ channels at the third points or not to exceed 48″ o.c. and at mid-height. The channels to be saddle-tied at each stud.

Braced furring requires a rigid, secure attachment at 24″ o.c. along the mid-point bridging channel to the masonry back-up.

USG Adjustable Wall Furring Brackets, with serrated edges up, shall be attached to the masonry walls at mid-height of the furred wall and spaced not over 4″ from columns or other abutting construction and not over 24″ o.c. horizontally and 48″ o.c. vertically, and as required above and below windows, using (one 2″ cut nail in mortar joints of brick clay tile, or cement block or in the field of lightweight aggregate blocks) (⅝″ concrete stub nails or power driven nails or other suitable fasteners in monolithic concrete). Fastenings shall be driven through top hole of bracket. The mid-height furring channels shall be laid horizontally on the furring brackets with the legs down, and wire tied to the bracket with a double strand of 18-ga. tie wire. Excess bracket length shall be bent down.

door frames

Studs shall be inserted into the steel door frame, nested in the notches of the jamb anchor clips, and each chord of the stud securely wire tied at each side of each jamb anchor. A second stud shall be installed on each side of the door frame, approximately 2″ from the strut stud.

Two ¾″ cold rolled channels shall be used over the head of the door, extending out to engage the third stud on each side. These aligning channels shall be securely tied to the inside of the stud chord at each intersection.

direct plaster base attachment

ROCKLATH (Plain) (Perforated) shall be applied starting at the bottom with long dimension at right angle to the studs. The lath shall be butted together and clipped in place using (TRUS-LOK Starter Clips TL-2) or (Drive-in Clips) TRUS-LOK Field Clips TL-1, spaced not to exceed 16″ o.c. Finishing course of ROCKLATH shall be fastened with 1″ #12 flat head self-tapping sheet metal screws driven between vertical stud wires and spaced 8″ from ceiling. End joints of lath shall be staggered between studs and aligned using the BRIDJOINT B-1 Field Clips at all lath corners. The lath shall be cut accurately and fitted neatly around all electrical outlets, openings, etc.

resilient plaster base attachment

ROCKLATH (Plain) (Perforated) shall be applied starting at the bottom with long dimension at right angle to the studs. The lath shall be butted together and resiliently clipped in place using Resilient Starter-Finisher Clip R-SF and Resilient Field Clip TR-1, spaced not to exceed 16″ o.c. End joints of lath shall be staggered between studs and aligned using the BRIGJOINT B-1 Field Clips at all lath corners.

lathing accessories

a. Metal Base 2½ inch (18) (20) gauge, painted, shall be notched to a neat miter in forming all angles. In continuous runs, ends shall be evenly butted and internally spliced with a splice plate. Base shall be securely held in place by engaging the base clips.

b. Cornerite (2″ x 2″) (3″ x 3″) shall be installed in all interior plaster angles. Staple at the edges.

c. Metal Corner Bead No. (000000) shall be provided on all external plaster corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. Fasten securely with galvanized staples, etc., spaced not over 8″ o.c.; stagger in two wings.

d. Casing Bead No. (000000) shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed. Staple in place.

e. Reinforcing. Install a strip of self-furring diamond mesh lath over joints between dissimilar plaster bases. At all openings, reinforce the corners attaching a 12″ x 24″ piece of self-furring diamond mesh lath diagonally across the corners. Staple in place.

f. Base Screed No. (000000) shall be installed 6″ above the finish floor, unless otherwise indicated. Set screeds level, true to line, in lengths as long as practical, with joints aligned with a suitable splice. Staple in place.

UNITED STATES GYPSUM

partitions **a**

Metal Studs and ROCKLATH*

PLASTER BASE

1196

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
1 hr.	Met Stud—Gypsum Lath & Plaster—2½" USG studs 24" o.c.—2" THERMAFIBER ins wool blkts—⅜" perf ROCKLATH—½" gypsum sand plaster wt 13 width 4¼"	T-1974-OSU (f) TL-63-268 (s)	38		141		a-1196
wall furring application							
—	3⅝" USG Studs 16" o.c., ⅜" Insulating ROCKLATH screw attached, ½" basecoat plaster, lime putty finish	—	—	—	175	Free standing furring; has pipe chase clearance; 9' limiting height; good vapor barrier	a-1196

description

This partition assembly consists of ROCKLATH Plaster Base, either plain or perforated types, attached to lightweight steel channel studs. The USG Stud is roll-formed in three stud widths (see table below) from 26 ga. hot dipped galvanized steel. Studs, set in steel runner track at the floor and ceiling, are screw attached or rapidly pierced and crimp-locked in place. A specially designed power-driven, self-drilling steel screw is used to attach the ROCKLATH Plaster Base to the stud.

ROCKLATH, a gypsum core faced on both sides with special paper, forms a rigid base for the economical application of gypsum plasters. For this assembly, ROCKLATH is ⅜" thick, available in two types (Perforated or Plain) and two sizes (see Specifications, page 8). In perforated ROCKLATH, ¾" round holes, punched through the lath 4" o.c. in each direction, provide a mechanical key for additional plaster bond.

function and utility

This assembly provides a simple, easy-to-erect, incombustible, non-load bearing assembly. The stud construction allows vertical chaseways for pipes, conduits and ducts, with some horizontal chaseways through web cutouts.

Fire Resistance—All components are incombustible; 1-hour fire rating (see table above).

Sound Isolation—The assembly provides a 38 sound transmission class at low cost (see table above).

Lightweight—The partition has a dead load of approximately 13 psf.

Strength—This assembly with studs spaced 24" o.c. provides adequate strength for normal partition usage.

Economical—Low material costs, speed of erection and versatility of the system provide a cost comparable to or lower than wood frame construction.

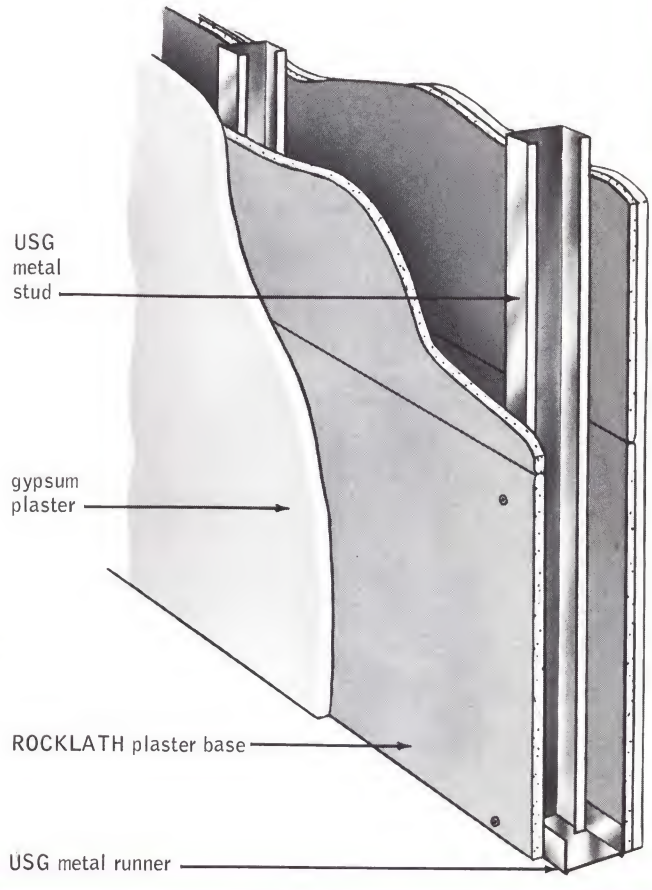
limitations

1. A non-load bearing partition.
2. Limiting heights of the partition must be reduced by 15% if a lightweight aggregate basecoat is used.
3. Plaster must be applied by the 3-coat method (see USG Folder on Gypsum Plasters).

partition thickness—limiting heights

stud width	section modulus	partition thickness	maximum partition height (1)
1⅝"	.074"³	3⅜"	10'-0"
2½"	.096"³	4¼"	13'-6"
3⅝"	.123"³	5⅜"	17'-0"

(1) Reduce ceiling height by 15% if lightweight aggregate basecoat is used.



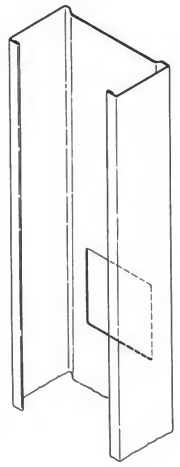
A.I.A. File No. 20-B-2.1

A.I.A. File No. 20-B-2.1

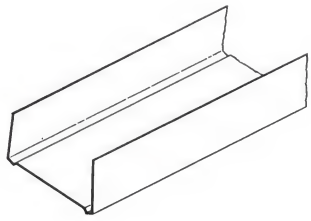
*Reg. U.S. Pat. Off.

components

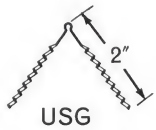
see "plaster bases" product catalog for full description on accessories & sizes



USG metal stud

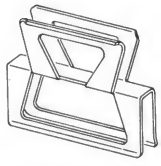


USG runner track



USG
4-R
expanded
flange
corner bead

USG
1-A
expanded
corner bead

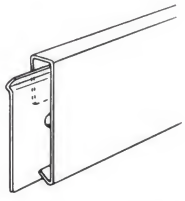


BRIDJOINT* B-1
field clip

USG
5-A
bull nose
corner bead

USG
10-A
expanded
bull nose
corner bead

USG metal base
splice plate

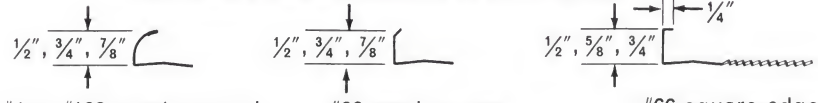


USG metal base &
splice plate

USG ¾″ screw-type S

USG
selv-edge
cornerite

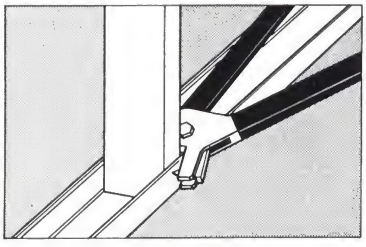
USG casing beads (expanded or short flange)



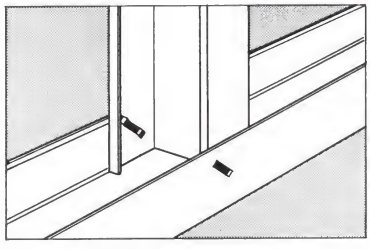
#4 or #138 quarter round

#60 semi-square

#66 square-edge



pierces & folds light metal



positive & permanent lock

USG metal lock fastener

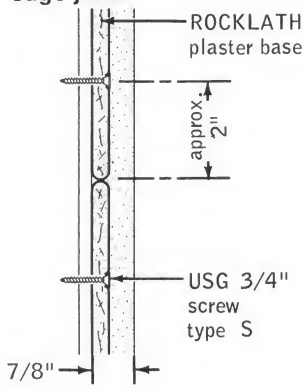
*Reg. U.S. Pat. Off.

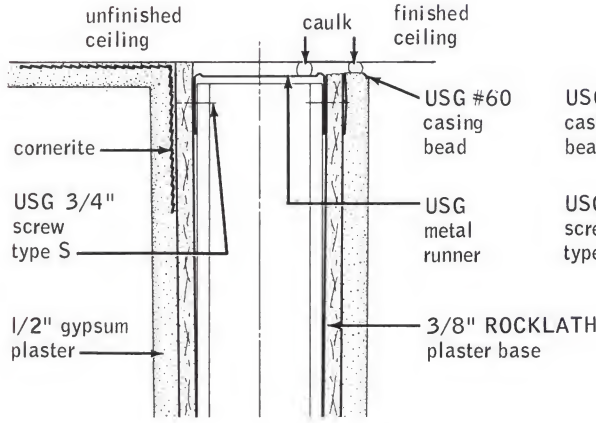
details

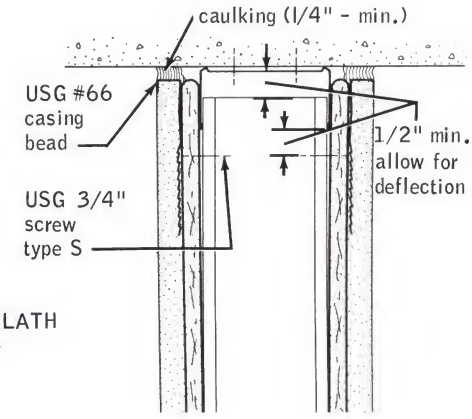
scale: 3″ = 1′-0″

ceiling attachments

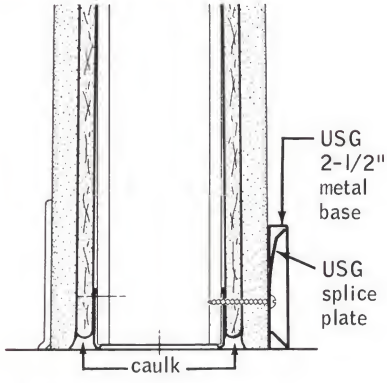
ROCKLATH edge joint



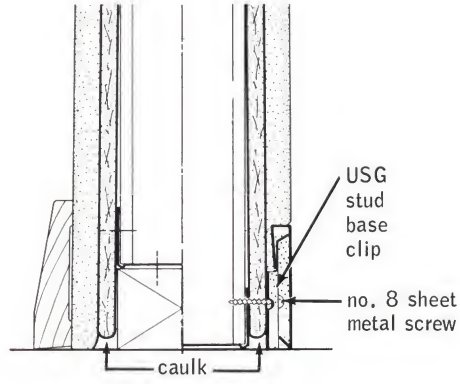




floor attachments & bases

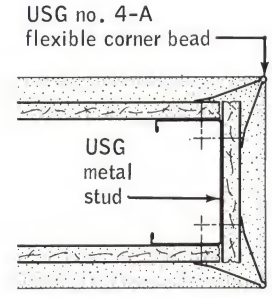


top set — metal

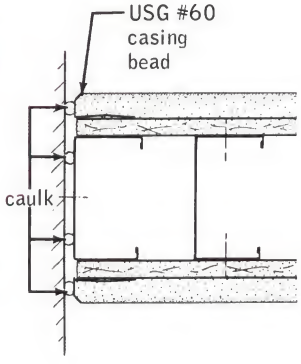


wood — metal

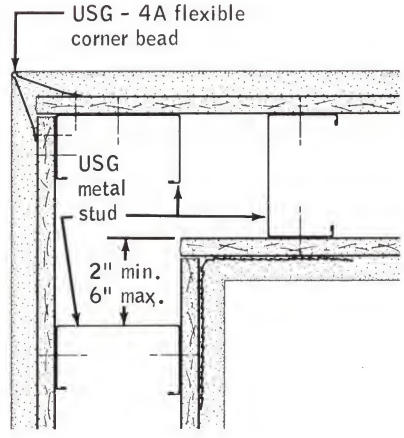
partition terminal



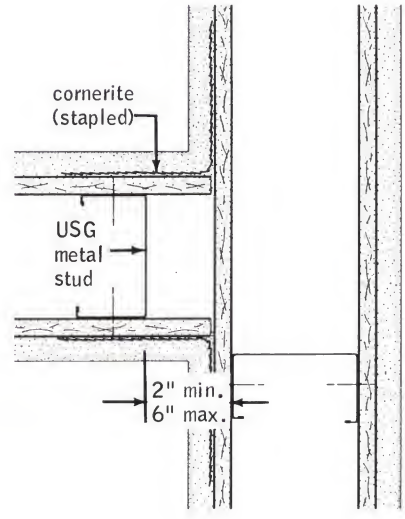
intersecting walls



wall intersection



corner

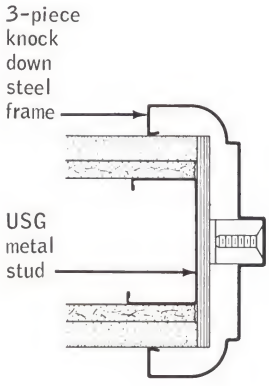


partition intersection

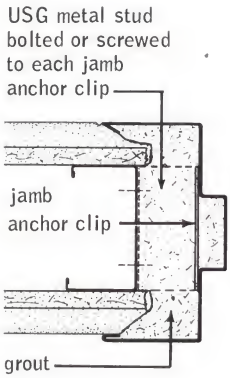
*Reg. U.S. Pat. Off.

details

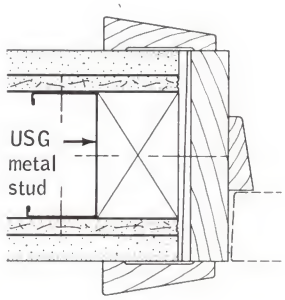
scale: 3″ = 1′-0″



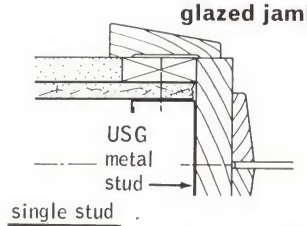
jamb

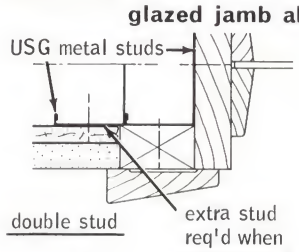


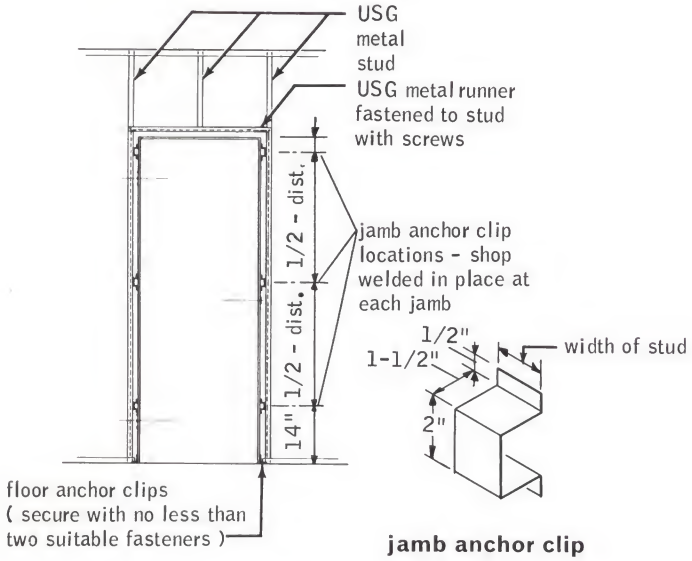
jamb



jamb

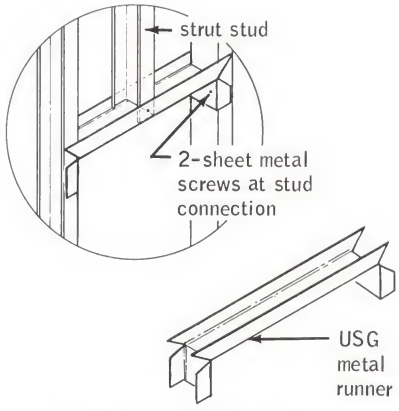




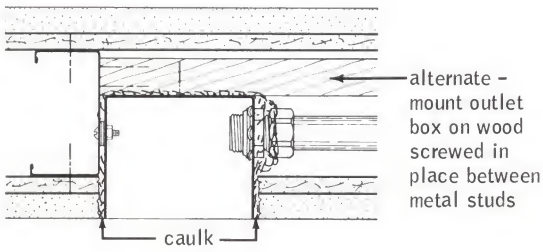


elevation
cross section thru frame

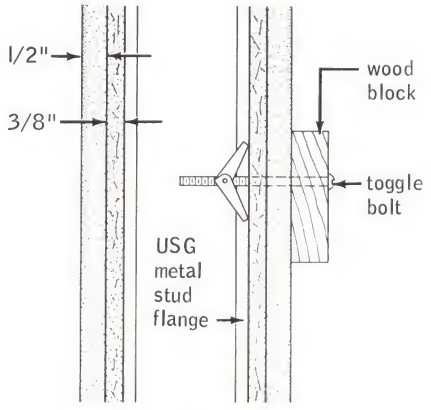
jamb anchor clip



attachment of runner track as header or sill



outlet box



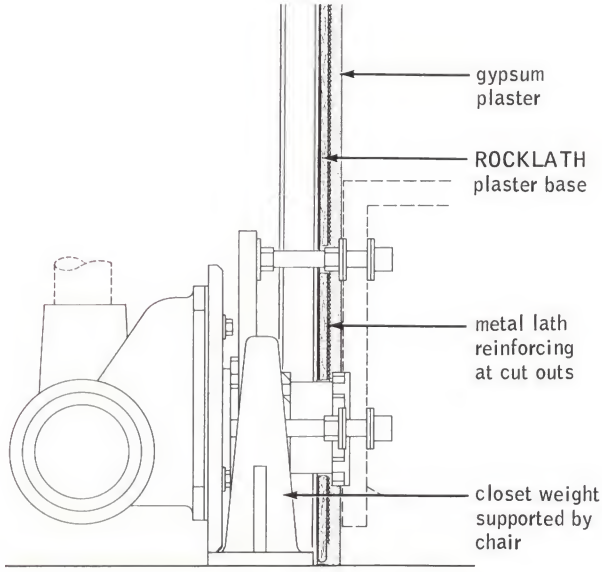
medium fixture attachment

details

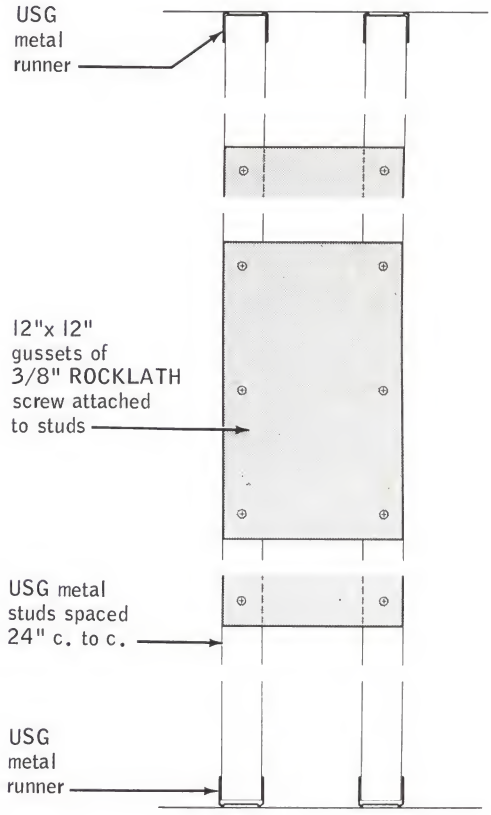
core walls

Core walls, as vertical shafts encasing the usual plumbing supply and wastelines, vent ducts and electrical conduits, require more free space than can be provided within the usual partition assembly.

The Metal Stud core wall may be formed of two USG Studs bracketed together with 12″x12″ gussets of ⅜″ ROCKLATH plaster base (see detail). Gussets should be spaced not to exceed 36″ o.c. and securely attached to USG Studs using three ¾″ L-P Screws. Limiting height for this core wall is 10′.



closet carrier



core wall

exterior wall furring

It is recommended that all exterior walls be furred. Asphaltic or bituminous bonding agents are not recommended as a plaster base. ⅜″ square edge Long Length Insulating ROCKLATH and plaster provide structural and economic advantages for special furring conditions.

In this system 3⅝″ USG Studs are placed vertically in floor and ceiling runner tracks. Long Length Insulating ROCKLATH is attached to the studs by special screws and plaster is applied to ½″ grounds.

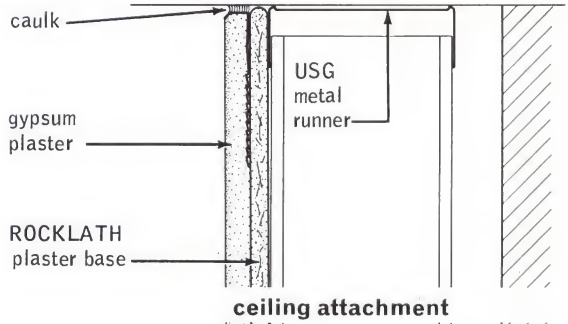
function and utility

The same cost-saving features and incombustible components found in the Metal Stud partition are used in this method of exterior wall furring. In addition, when Insulating ROCKLATH Plaster Base is used, its features include:

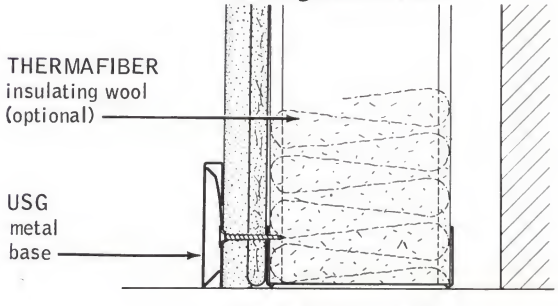
1. Condensation control.
2. Protection from moisture seepage.
3. Insulation and vapor barrier.
4. A degree of isolation from structural movement.

limitations

1. Limiting height is 12′.
2. Plaster must be applied by the 3-coat method (see USG Folder on Gypsum Plasters).



ceiling attachment



base attachment

free standing furring

*Reg. U.S. Pat. Off.

specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *Steel door frames should be fabricated from 16 gauge metal, minimum, shop primed. The opening at the trim return should be accurately formed to the over-all thickness of the partition.*

Base plates, designed with two anchor holes to prevent rotation, should be securely attached to trim returns to dampen door impact vibrations. Floor anchorage should be by two power-driven anchors or equivalent per plate.

Four jamb anchors should be provided on each jamb, welded to the trim returns (see detail page 4) and screw attached to the stud. Separate bracing shall be furnished to keep the frame in alignment.

Grouting of the door frame is recommended on all installations and is required where heavy or oversize doors are used. The grout shall be raked out to allow the lath and plaster to be inserted into the frame. Under no conditions shall the lath and plaster terminate against the trim return of the door frame.

Door closers are required on all doors where the weight of the door (including attached hardware) exceeds 50 lbs.

3. *Lath and plaster surfaces (non-load bearing) will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that lath and plaster surfaces be isolated from all structural elements by control joints or other means where:*

- **a.** *a partition abuts a structural element or dissimilar wall or ceiling assembly.*
- **b.** *the partition construction changes within the plane of the partition.*

In long partition runs, control joints should be provided no more than 30′ o.c. Door frames extending from floor to ceiling are recommended as control joints. For doors less than ceiling height, control joints extending from both corners of the frame to the ceiling may be used.

4. *Holes cut in a thin diaphragm of lath and plaster, such as door frames, borrowed lights, etc., cause a concentration of stresses in the plaster diaphragm. The use of cornerite, striplath and self-furring diamond mesh lath is recommended at the weakened area to distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

5. *Where a plaster surface is flush with metal, metal bucks, metal windows, or metal base, the plaster should be grooved between the two materials.*

6. *Fixture Attachment—Lightweight fixtures and trim shall be installed by drilling set dry plaster to a minimum depth of ¾″ and inserting a plastic plug or other expandable anchor for anchorage of attachment screws. Wood or metal mounting strips for cabinets and shelving should be toggle bolted through the lath and plaster, locating fasteners as near the studs as possible.*

7. *Ceramic Tile—(Where portland cement plaster base for ceramic tile is specified; self-furring diamond mesh metal lath shall be stapled over the ROCKLATH plaster base with staples, spaced approximately 8″ o.c. horizontally and vertically, and portland cement-lime plaster shall be applied in scratch and brown coats to ⅝″ grounds over the metal lath as the ceramic tile base). (Ceramic tile may be adhesively applied over the finished gypsum plaster in accordance with adhesive manufacturer's specifications.)*

8. *To retain maximum sound isolation, the integrity of the partition should not be voided by openings such as electrical outlets, medicine cabinets, vents, etc., that create sound leaks. Use sand aggregate only; do not use lightweight aggregates.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM; Architect Service Department, 101 S. Wacker Dr., Chicago, Ill., 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company.

- **a.** ROCKLATH Plaster Base shall be (⅜″x16″x48″) (⅜″x16″x 96″) Regular or Perforated ROCKLATH for Metal Stud partition; ⅜″ Insulating ROCKLATH, 16″x96″ for exterior wall furring.
- **b.** USG Metal Studs (1⅝″, 2½″, 3⅝″); lengths as required.
- **c.** USG Metal Runner for (1⅝″, 2½″, 3⅝″) USG Metal Studs.
- **d.** USG ¾″ L-P Screws—Type S.
- **e.** BRIDJOINT* B-1 Field Clips for ⅜″ ROCKLATH.
- **f.** USG Metal Base—2½″ (18) (20) ga.
- **g.** USG Metal Base Splice Plate.
- **h.** USG Selv-edge Cornerite (2″x2″) (3″x3″).
- **i.** USG Striplath.
- **j.** USG Self-Furring Junior Diamond Mesh Metal Lath.
- **k.** USG Corner Bead (specify type from page 2).
- **l.** USG Casing Bead (specify type from page 2).

stud system erection

USG Studs shall be of the size shown on the plans or as herein specified, spaced not to exceed 24″ o.c. All partitions shall be aligned accurately according to the partition layout.

USG Runner Tracks where required shall be securely attached:

1. **To concrete slabs**—Using concrete stub nails or power-driven anchors, spaced not to exceed 24″ o.c.
2. **To ceiling grillage**—Wire tie, using a double strand of 18 ga. tie wire, spaced not to exceed 16″ o.c.
3. **To plaster or gypsum lath**—Toggle bolt or staple, spaced not to exceed 24″ o.c.

Studs shall be placed vertically, engaging both floor and ceiling runner tracks. When necessary, studs may be spliced by nesting two studs with a minimum lap of 8″ and attaching flanges together with two screws in each flange.

Studs shall be spaced not to exceed 24″ o.c. and a stud shall be placed 2″ from abutting partitions, internal corners, partition terminals, and other similar locations.

*Reg. U.S. Pat. Off.

door frames

Studs shall be inserted into the steel door frame, accurately centered, and attached to the anchor clips securely, using a bolt or screw attachment.

1. Where lightweight doors are used a second stud shall be nested to form a box section and anchored together by a pair of screws at each anchor clip.

2. Where heavy doors or oversize doors are used the single stud shall be grouted in place.

Over the metal frames a cut-to-length section of track, with the flanges slit and web bent to allow flanges to overlap adjacent vertical studs, shall be installed as a header to receive studs above the frame.

plaster base attachment

ROCKLATH shall be attached horizontally to USG Studs with two ¾″ L-P Screws, Type S, at each stud. Screws shall be placed approximately 2″ from the edges of the ROCKLATH. Screws shall be power-driven with an electric Scrugun. End joints of ROCKLATH shall be staggered between studs and aligned using at all lath corners the B-1 BRIDJOINT Clip.

lathing accessories

a. Metal Base 2½″ (18) (20) gauge, painted, shall be notched to a neat miter in forming all angles. In continuous runs, ends shall be evenly butted and internally spliced with a splice plate. Base shall be securely held in place by engaging the base clips.

b. Cornerite (2″x2″) (3″x3″) shall be installed in all interior plaster angles. Staple at the edges.

c. Metal Corner Bead No. (000000) shall be provided on all external plaster corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. Fasten securely with galvanized staples, etc., spaced not over 8″ o.c.; stagger in two wings.

d. Casing Bead No. (000000) shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed.

e. Reinforcing—Install a strip of self-furring diamond mesh lath over joints between dissimilar plaster bases. At all openings, reinforce the corners attaching a 12″x24″ piece of self-furring diamond mesh lath diagonally across the corners.

*TRADEMARKS: The following trademarks are owned and/or registered in the U.S. Patent Office by United States Gypsum Company, and are used throughout this catalog to designate particular products manufactured by that company: USG (metal products); ROCKLATH (plaster base); THERMAFIBER (insulation products); BRIDJOINT (metal clips).

NOTE: Since methods and conditions of application and use are beyond our control, the United States Gypsum Company will not be responsible for failure of its products when not used according to our directions and specifications.

UNITED STATES GYPSUM

direct attachment

partitions

a

1206

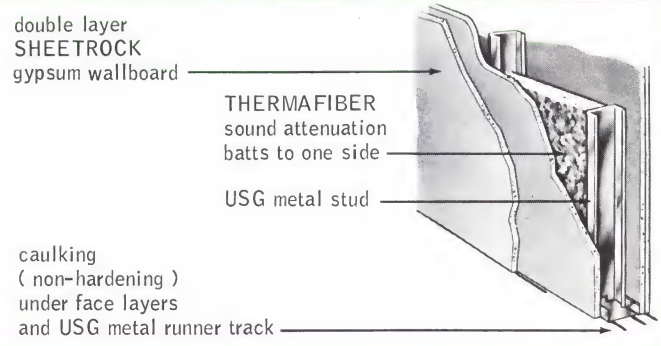
USG® Metal Stud Drywall

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
2 hrs.	Met Stud—2 layers ½" SHEETROCK FIRECODE "C" gypsum wallbd—1⅝" USG studs 24" o.c.—2 layers ea side vert appl & screw att joints stag & fin wt 9 width 3⅝"	U of C 6-15-65 (f)	N/A		156	Most economical 2-hour metal stud drywall partition	a-1206
2 hrs.	Met Stud—2 layers ⅝" SHEETROCK FIRECODE gypsum wallbd plain or vinyl faced ea side—3⅝" USG studs 24" o.c.—base layer screw att—face layer lamin or screw att—joints fin or unfin wt 12 width 6⅛"	UL Des 11-2 hr (f) TL-60-113 (s)	46		157	Excellent for corridors—sound rating on taped face joints	a-1206
2 hrs. est	Met Stud—2 layers ⅝" SHEETROCK FIRECODE gypsum wallbd ea side—3⅝" USG studs 24" o.c.—base layer screw att—face layer lamin—1½" THERMAFIBER sound atten blkts—joints fin—perimeter caulked wt 12 width 6⅛"	USG-109-FT-G&H (s) Field Test KSO-109006-a (s)	53 55		176	Highest stc value of metal stud drywall party walls tested	a-1206
2 hrs. est	Met Stud—⅝" SHEETROCK FIRECODE gypsum wallbd—3⅝" USG studs 24" o.c.—2 layer—base layer ½" USG min fiber sound dead bd ea side screw att—wallbd face layer lamin & screw att—joints stag & fin—perimeter caulked wt 8 width 5⅞"	USG-103-FT-G&H (s) Field Test KSO-109006-b (s)	52 50		186		a-1206
2 hrs. est	Met Stud—2 layers ½" SHEETROCK FIRECODE "C" gypsum wallbd ea side—2½" USG studs 24" o.c.—1½" THERMAFIBER sound atten blkts stapled—wallbd appl vert & joints stag—base layer screw att—face layer strip lamin & Type G screws centered betw studs—joints fin—perimeter caulked wt 10 width 4½"	USG-114-FT-G&H (s)	54		173	Best value of drywall metal stud party walls in 50-54 stc range	a-1206
2 hrs. est	Met Stud Chase Wall—2 layers ½" SHEETROCK FIRECODE "C" gypsum wallbd ea side—1⅝" USG studs 24" o.c. in 2 rows spaced 6¾" apart—½" wallbd gussets spanning chase att to studs at qtr points—wallbd appl vert & screw att—1½" THERMAFIBER sound atten blkts one side—joints stag & fin wt 11 width 12"	USG-134-FT-G&H (s)	55		189	Only known sound test on drywall metal stud chase wall assembly	a-1206
1½ hrs. est	Met Stud—½" SHEETROCK FIRECODE "C" gypsum wallbd—3⅝" USG studs 24" o.c.—single layer wallbd one side appl vert & screw att—1" THERMAFIBER sound atten blkts one side—2 layers wallbd opp side appl vert & screw att—joints stag & fin—perimeter caulked wt 7 width 5⅛"	TL-65-252 (s)	51		156	Sound trans. loss value improved 4db by double layer wallbd one side	a-1206
1 hr. est	Met Stud—½" SHEETROCK FIRECODE "C" gypsum wallbd—3⅝" USG studs 24" o.c.—single layer wallbd ea side appl vert & screw att—1" THERMAFIBER sound atten blkts one side—joints fin—perimeter caulked wt 5 width 4⅝"	TL-65-158 (s)	47		138		a-1206
1 hr.	Met Stud—½" SHEETROCK FIRECODE gypsum wallbd—1⅝" USG studs 24" o.c.—2 layer—base layer ½" USG min fiber sound dead bd screw att—wallbd face layer strip lamin & screw att—joints stag & fin wt 7 width 3⅝"	UL Des 23-1 hr (f) USG-57-FT-G&H (s)	48		167	Min. value metal stud drywall party wall—sound test made on 3⅝" studs	a-1206
1 hr.	Met Stud—⅝" SHEETROCK FIRECODE gypsum wallbd—3⅝" USG studs 24" o.c.—wallbd single layer screw att 12" o.c.—joints fin—perimeter caulked wt 6 width 4⅞"	T-1174-OSU (f) USG-17-FT-G&H (s)	42		106	Basic 1-hr. metal stud drywall corridor—fire test based on screws 8" o.c. at vert. joints	a-1206
1 hr.	Met Stud—⅝" SHEETROCK FIRECODE gypsum wallbd—1⅝" USG studs 24" o.c.—wallbd single layer screw att 12" o.c.—joints fin—perimeter caulked wt 5 width 2⅞"	U of C 7-31-62 (f) TL-64-29 (s)	38		105	Min. 1-hr. drywall partn.—fire test based on screws 8" o.c. at vert. joints	a-1206

description

These lightweight non-load bearing partition assemblies consist of steel channel studs, set in floor and ceiling runner tracks and faced each side with one or two layers of SHEETROCK* Gypsum Wallboard. A specially designed self-tapping steel screw with a rust-inhibitive coating is used to attach the wallboard to the studs. The studs, available in three widths (see Specifications, page 7) and lengths to suit job requirements, have holes punched 12" from each end to facilitate electrical installation. The partitions are completed with the PERF-A-TAPE* Joint System and DUR-A-BEAD* Corner Reinforcement.

(continued on page 6)

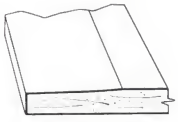


A.I.A. File No. 20-B-2.1

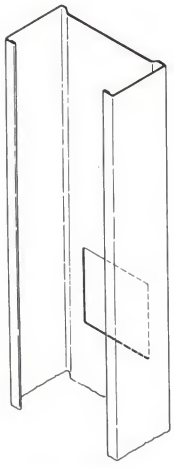
A.I.A. File No. 20-B-2.1

*Reg. U.S. Pat. Off.

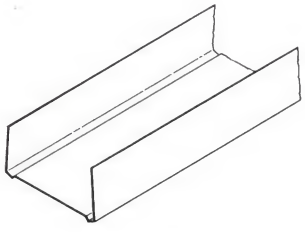
components



tapered edge
SHEETROCK gypsum wallboard



USG metal stud



USG metal runner

see "gypsum wallboard & joint treatment" product catalogs for full description on accessories

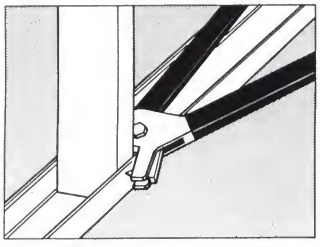
⅜″ USG drywall screw—type S-12—pan head

1″ USG drywall screw—type S—bugle head

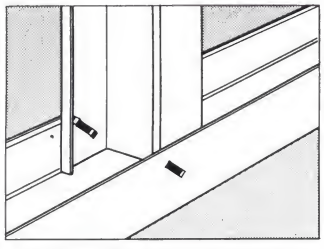
2¼″ USG drywall screw—type S—bugle head

2¼″ USG drywall screw—type S—trim head

1 ½″ USG drywall screw—type G—bugle head

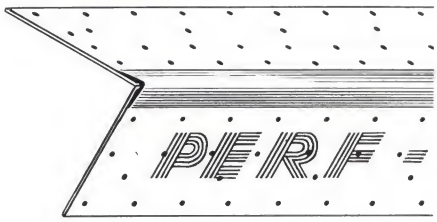


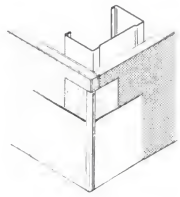
positive & permanent lock



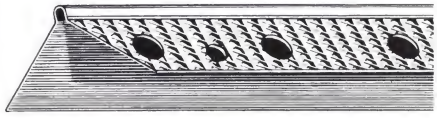
pierces & folds light metal

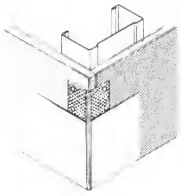
USG metal lock fastener



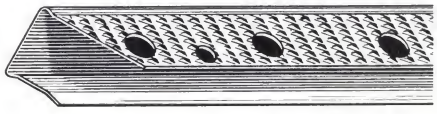


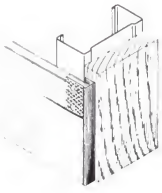
no. 100 PERF-A-BEAD



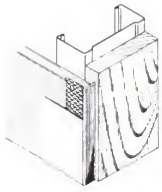


DUR-A-BEAD corner reinforcement

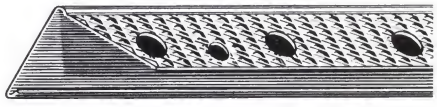


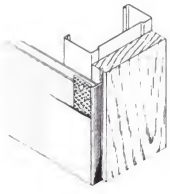


no. 200-A USG metal trim

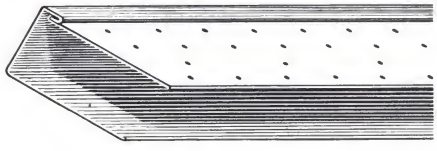


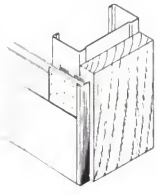
no. 200-B USG metal trim



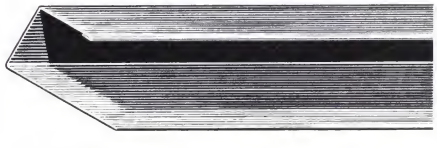


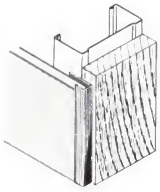
no. 200-C USG metal trim





PERF-A-TRIM*





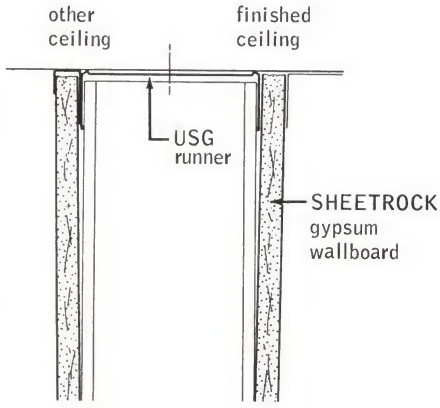
USG metal trim

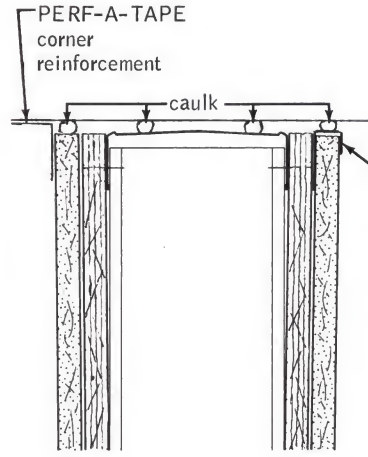
*Reg. U.S. Pat. Off.

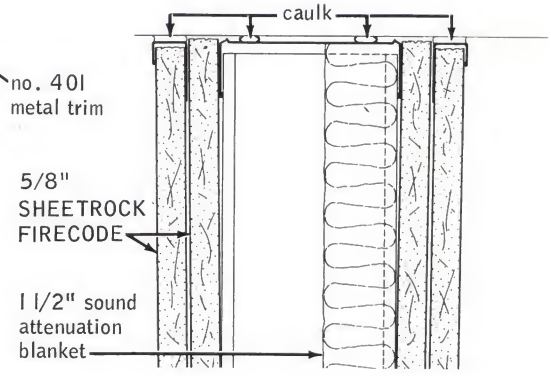
details

scale: 3″ = 1′-0″

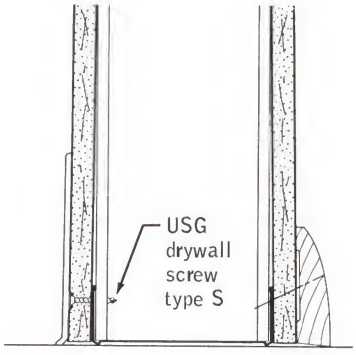
ceiling attachments

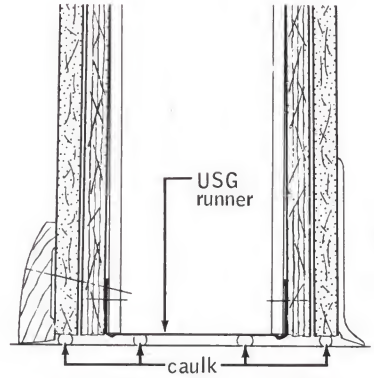


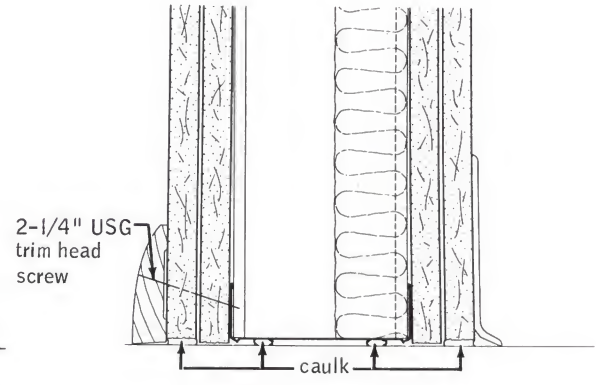




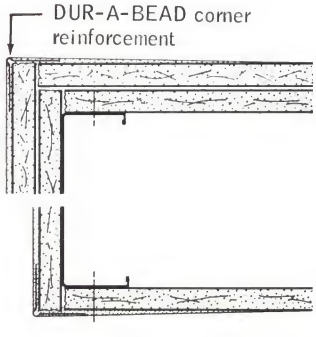
floor attachments & bases

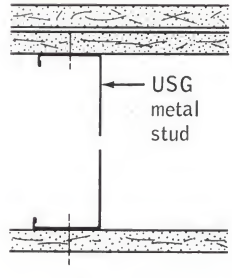


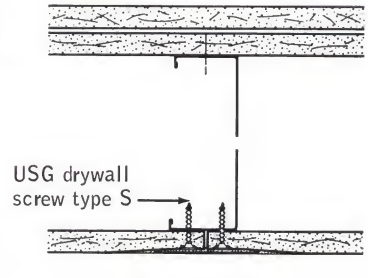


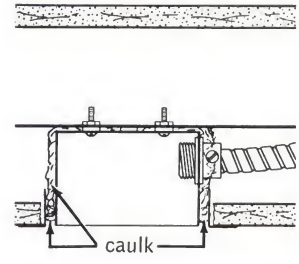


wall plan sections





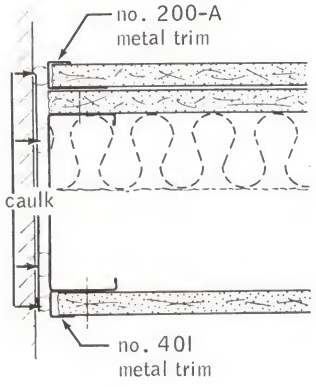




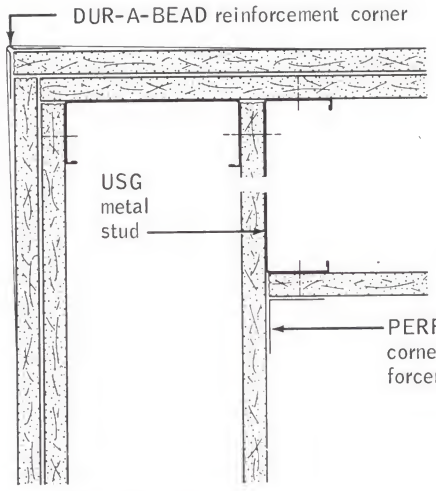
details

scale: 3″ = 1′-0″

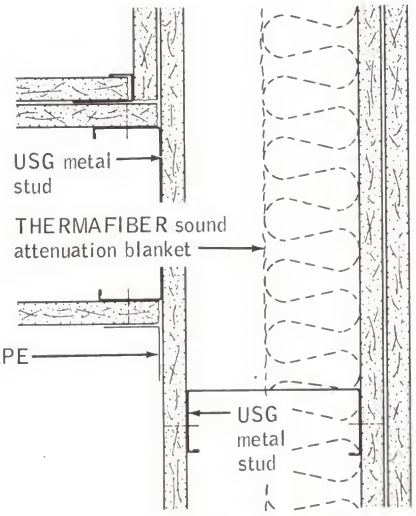
intersecting walls



masonry wall

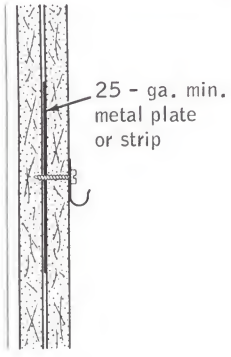


partition corner

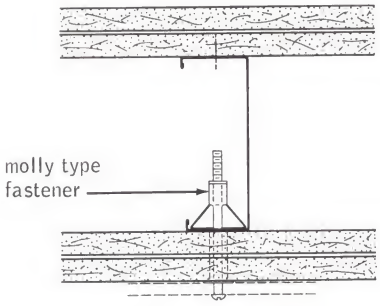


partition "t"

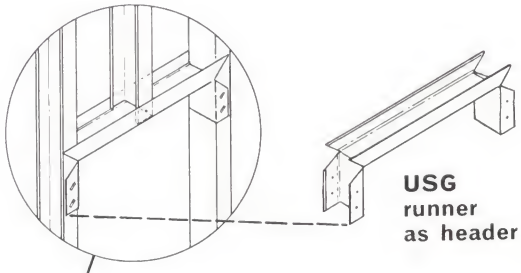
fixture attachments

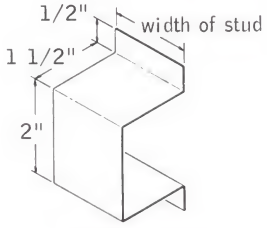


light



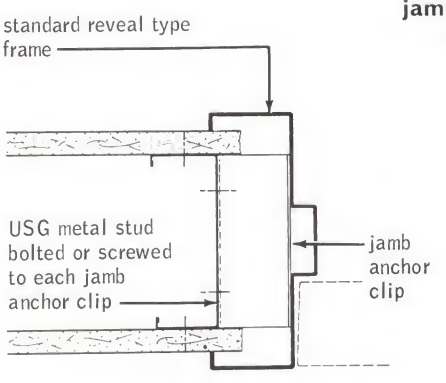
medium



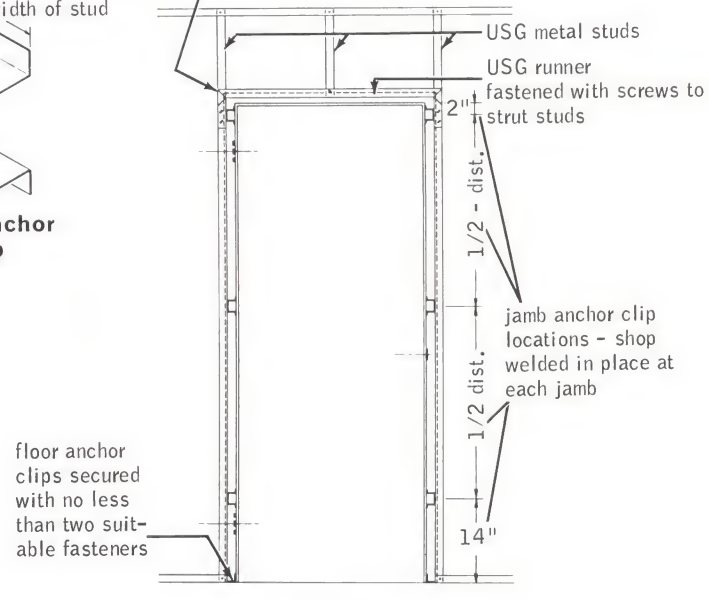


jamb anchor clip

metal door frame



jamb



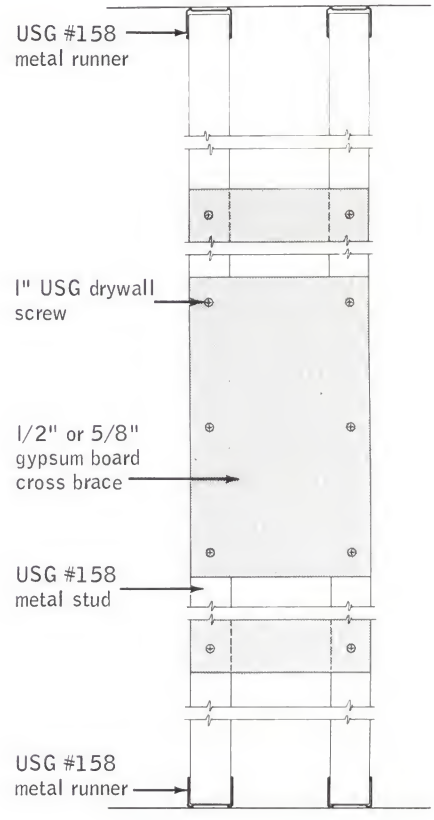
elevation
cross section through frame

metal stud chase wall

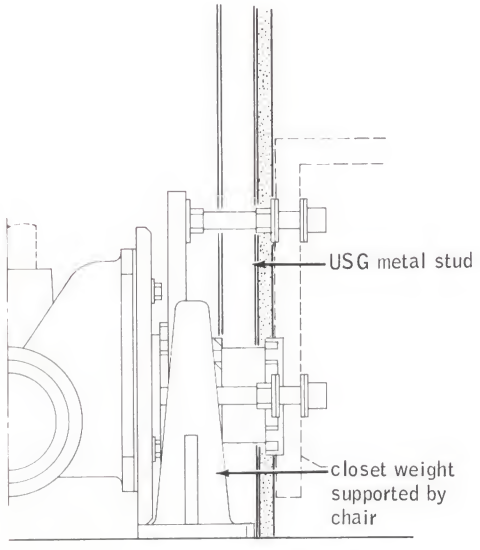
The USG Metal Stud Chase Wall construction consists of a double row of metal studs with gypsum board cross braces between the rows. This construction is designed for use where greater core widths are needed for pipe chase enclosures and other service installations. It provides the same advantages as the USG Metal Stud Partition System such as speed of erection and low cost, and permits the use of one component system throughout a building.

The limiting thickness for this chase wall is 15″; limiting height is 10′. The minimum size of the SHEETROCK Gypsum Wallboard face panels or base panels should be ½″ x 4′ x ceiling height.

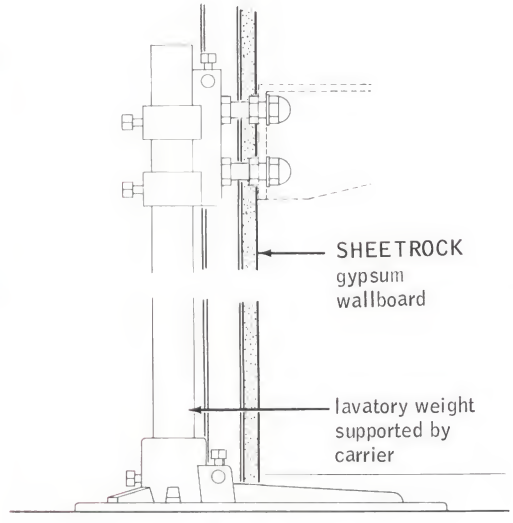
no scale



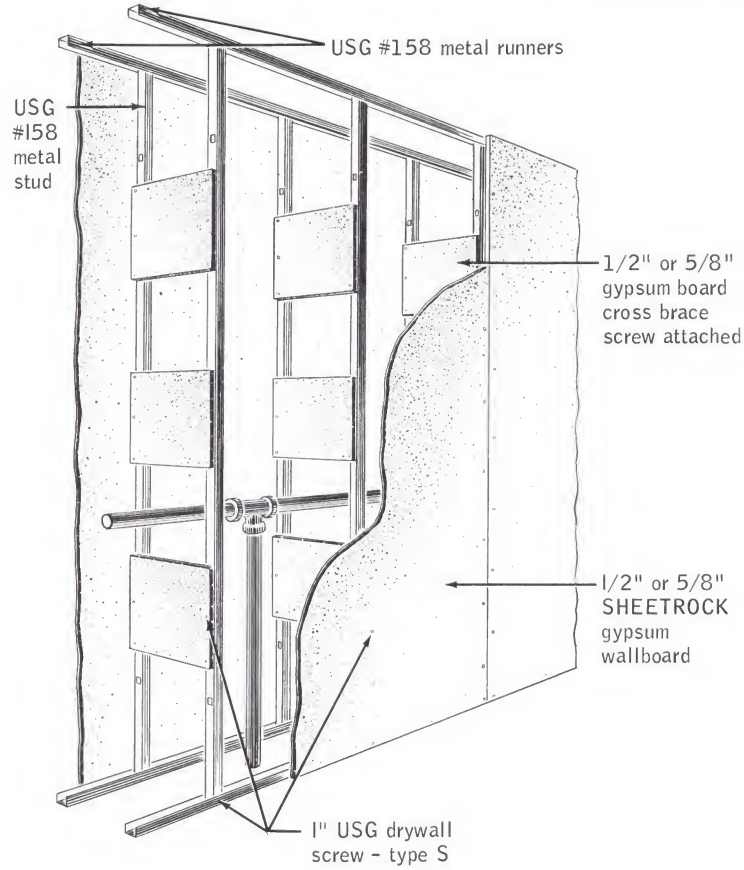
elevation



closet carrier



lavatory carrier



drywall soffit

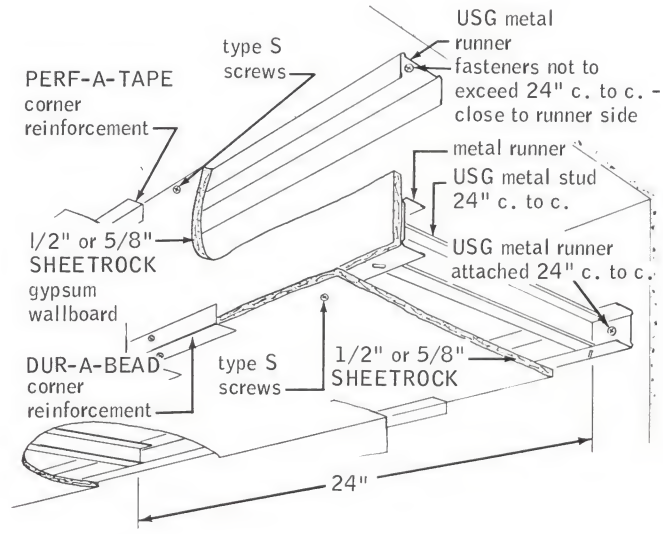
The USG Drywall Soffit assembly consists of electro-galvanized steel channel runners and studs faced with SHEETROCK Gypsum Wallboard, screw attached. It is a lightweight, fast and economical method of filling over cabinets or lockers and of housing overhead ducts, pipes or conduits. The system permits constructing soffits with depths of 48″ and widths to 72″ without supplementary vertical studs.

Construction recommendations—Maximum dimensions (1):

gypsum board thickness (2)	metal stud size	maximum width	max. depth for max. width shown
½″	1⅝″	60″	48″
½″	2½″, 3⅝″	72″	36″
⅝″	1⅝″	60″	30″
⅝″	2½″, 3⅝″	72″	18″

(1) The construction is not designed to support loads other than its own dead weight and should not be used where it may be subjected to excessive abuse.

(2) The double-layer wallboard system and ⅜″ thick wallboard are not recommended for this construction.



description (*continued from page 1*)

SHEETROCK for these assemblies is available in three thicknesses and two types (see Specifications). In two-layer construction USG Mineral Fiber Sound Deadening Board or BAXBORD* Gypsum Backing Board may be used as a base layer. SHEETROCK FIRECODE* Gypsum Wallboard, with a specially formulated core, obtains higher fire resistance ratings than plain SHEETROCK Wallboard (see table on page 1).

function and utility

Adaptable for use as party walls, corridor walls and interior partitions in virtually every type of new construction—commercial, institutional, industrial and residential—or alteration work for permanent space division. With single layer SHEETROCK, applied horizontally or vertically, the system offers very economical partitioning. With double-layer construction, excellent resistance to fire and sound transmission is available.

Fire Resistant—Constructed of incombustible components. Established fire ratings: 1 hour, with single-layer ⅝″ SHEETROCK FIRECODE Wallboard; 2 hours, with double-layer ½″ FIRECODE "C" or ⅝″ FIRECODE Wallboard applied each side of USG Metal Studs.

Sound Isolation—Sound transmission class ratings up to 55 for double-layer, 42 for single-layer ⅝″ SHEETROCK each side of USG Metal Studs with joints treated. Where greater sound isolation is desired for party walls, THERMAFIBER* Sound Attenuation Blankets can be inserted in the stud cavity (see table, page 1).

Lightweight—With 3⅝″ studs and single-layer ⅝″ SHEETROCK applied each side, the partition weighs approx. 6 psf; with double-layer ½″ FIRECODE "C" each side and 1⅝″ studs, only 9 psf—making possible savings in structural requirements.

Economical—Low material cost, speed of erection and versatility of this system provide realistic and competitive construction costs.

limitations

1. Non-load bearing.
2. The partitions should not be used where normally exposed to excessive moisture or humidity.
3. Limiting heights: 1⅝″ stud, 9′; 2½″ stud, 12′; 3⅝″ stud, 16′.
4. Maximum stud spacing is 24″ o.c. *Exception:* Where single layer ⅜″ board is applied each side, maximum stud spacing is 16″ o.c.

sound attenuation factors

test no.	method	decibel frequency in cps										STC
		125	175	250	350	500	700	1000	1400	2000	2800	4000	
TL-60-113	Lab	35	37.5	43	48	50	50	50	47.5	43.5	49	54.5	46
KSO-109006-a	Field	36	47	47	49	51	53	57	59	57	55	62	55
USG-109-FT-G&H	Lab	35	42	47	47	50	50	58	61	61	58	61	53
USG-103-FT-G&H	Lab	34	36	44	46	52	56	57	60	53	53	55	52
USG-57-FT-G&H	Lab	30	33	43	42	50	57	56	57	59	51	51	48
USG-17-FT-G&H	Lab	26	32	36	38	42	49	53	53	40	41	47	42
TL-64-29	Lab	22	27	32	36	40	42	42	49	42	35	45	38
KSO-109006-b	Field	31	37	42	44	51	54	59	59	58	55	63	50
USG-114-FT-G&H	Lab	32	39	44	48	55	56	57	59	62	58	56	54
USG-134-FT-G&H	Lab	33	43	48	49	56	57	60	60	63	60	60	55

specifications

notes to architect

1. *Metal door and borrowed light frames should be formed from 18-ga. steel minimum, shop primed. The opening between the trim returns should be accurately formed to the overall thickness of the partition.*

Floor anchor plates should be 14-ga. steel minimum, designed with two anchor holes to prevent rotation and welded to trim flanges to dampen door impact vibrations. Floor anchorage should be by two power driven anchors or equivalent per plate. Jamb anchor clips should be formed of 18-ga. steel minimum, welded in the jamb and head (see detail page 4), and screw attached to the stud.

Door frame struts, when required, should be ¼″ minimum thickness, hot rolled steel bar stock and of sufficient width to completely fill doorstop void, anchoring jamb securely. All door frame struts should be supplied as an integral part of the door frame.

*Reg. U.S. Pat. Off.

All metal door and borrowed light frames should be spot grouted at the location of jamb anchor clips, after the stud and before the wallboard is installed. The grout should be raked out to allow the wallboard to be inserted into the frame. Under no conditions should the wallboard terminate against the trim return of the door frame.

Door closers and bumpers are required on all doors where the weight of the door (including attached hardware) exceeds 50 lbs.

2. *Non-load bearing drywall partitions will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that wallboard surfaces be isolated from all structural elements by control joints or other means where:*

a. *A partition abuts any structural element or dissimilar wall or ceiling assembly.*

b. *The partition construction changes within the plane of the partition.*

In long partition runs, control joints should be provided no more than 30' o.c. Door frames extending from floor to ceiling are recommended as control joints. For doors less than ceiling height, control joints extending from both corners of the frame to the ceiling may be used.

3. *Holes cut in a thin wallboard membrane such as door frames, borrowed lights, etc., cause a concentration of stresses in the wallboard. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

4. *Additional chases for electrical conduit or pipe can be provided by cutting round holes no greater in size than 75% of the stud width, located in the center of the stud web and spaced at least 12" apart. Additional holes should not be cut where a fire rating is required.*

5. Ceramic Tile—*The use of SHEETROCK W|R Gypsum Wallboard is recommended as a base for the adhesive application of ceramic, metal and plastic tile.*

6. *Where wood base is required it should be applied with trim head screws placed at each stud location and midway between stud locations (12" o.c.) and at other points where required.*

7. *Where this partition is used as a sound barrier, the use of non-hardening caulking material to seal all cut-outs, such as at electrical fixtures and to seal all intersections with the adjoining structure is recommended. Eliminate cutting holes back to back and adjacent to each other. Door and borrowed light openings are not recommended when this partition is used as a party wall.*

8. *The addition of 3" x 23" x 96" THERMAFIBER Insulation Blankets or 1½" x 24" x 48" THERMAFIBER Sound Attenuation Blankets in the stud cavity, pressed tightly in place or stapled to the back side of one face of the partition will increase the sound transmission loss of the partition.*

9. Fixture attachment—*Wood or metal mounting strips for cabinets or shelving should be toggle bolted through the wallboard locating fasteners as near studs as possible.*

10. *The 1½" USG Drywall Screw Type G is not recommended for use as temporary fastening when laminating two-ply ⅜" or ½" SHEETROCK (or BAXBORD) Double Wall. In these assemblies use scaffold nails through gypsum blocks at third points vertically.*

general conditions

In cold weather and during the period of wallboard application and joint finishing, temperatures within the building shall be maintained uniformly within the range of 55° to 70°F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

materials

See USG product folders in this series:

Joint Treatment Folder for PERF-A-TAPE Joint System Specifications.

Gypsum Wallboard Folder for information on Wallboard System Components.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. USG Metal Studs—Nos. 158 (1⅝"), 212 (2½"), 358 (3⅝").

b. USG Metal Runner—Nos. 158 (1⅝"), 212 (2½"), 358 (3⅝").

c. Faceboards—(⅜"), (½") (⅝") thick, 48" wide Tapered Edge SHEETROCK (Regular) (FIRECODE) (FIRECODE "C"), lengths as required.

d. Backing Board—(⅜") (½") (⅝") thick, (24") (48") wide BAXBORD (Regular) (FIRECODE), 8' lengths; or ½" USG Mineral Fiber Sound Deadening Board.

e. Insulation—THERMAFIBER Sound Attenuation Blankets (1½" x 24" x 48") (1" x 24" x 48").

f. Laminating Adhesive—PERF-A-TAPE Joint Compound (embedding type) or USG Laminating Adhesive.

g. Joint Treatment—PERF-A-TAPE or Durabond* Joint System.

h. Fasteners (specify type from page 2).

i. USG Metal Trim (specify type from page 2).

j. USG Corner Bead—DUR-A-BEAD, PERF-A-BEAD* (specify type from page 2).

k. Caulking—Presstite 579.64 Mastic as manufactured by Presstite Division of Interchemical Corporation or equal.

stud system erection

All partitions shall be aligned accurately according to the partition layout. Floor and ceiling runners shall be securely attached 24" o.c. to concrete slabs with concrete stub nails or power driven anchors, to suspended ceilings with toggle or molly bolts, to wood framing with suitable fasteners.

Studs shall be positioned vertically in the runners, spaced no greater than (16") (24") o.c. Anchor all studs located adjacent to door and window frames, partition intersections and corners to runner flanges with USG Metal Lock Fastener or by positive screw engagement through each stud flange and runner flange. When necessary, studs shall be spliced by nesting two studs with a minimum lap of 8" and attaching flanges together with two screws in each flange.

Studs shall be located no more than 2" from all door frame jambs, abutting partitions, partition corners and other construction. Studs shall be securely anchored to the jamb and head anchor clips of each door or borrowed light frame by bolt or screw attachment. Over metal door and borrowed light frames install a cut-to-length section of runner with the flanges slit and web bent to allow flanges to overlap adjacent vertical studs and securely screw-attach to adjacent studs. A cut-to-length stud extending from the door frame header to the ceiling runner shall be positioned at the vertical joints over the door frame.

panel erection

Gypsum wallboard shall be applied with long dimension (parallel) (at right angles) to framing members, and all abutting ends and edges (except in horizontal application) shall occur over stud flanges. Wallboard of the maximum practical length shall be used to minimize end joints. All end joints shall be neatly fitted and staggered. Joints on opposite sides of the

*Reg. U.S. Pat. Off.

partition shall be so arranged as to occur on different studs. Wallboard shall be cut neatly to fit around all outlets and switch boxes. Work done by this contractor shall be coordinated properly with that done by other trades.

For vertical single-layer wallboard application and where fire rating is required, 1″ USG Drywall Screws Type S shall be spaced a maximum of 12″ o.c. in the field of the board and 8″ o.c. staggered along the vertical abutting edges.

For horizontal single-layer wallboard application, 1″ USG Drywall Screws Type S shall be spaced a maximum of 12″ o.c. in the field of the board and 12″ o.c. along the abutting end joints.

For two-layer job laminated construction, apply the base layer vertically with 1″ USG Drywall Screws Type S spaced 12″ o.c. in the field of the board and 8″ o.c., staggered at the vertical joints of the board. Apply the face layer vertically with vertical joints, laminate and hold in place with supplemental fastening until adhesive is dry.

For two-layer construction with screw attachment of the face layer, apply the base layer vertically with vertical joints staggered on opposite sides of the partition and screw-attach with 1″ USG Drywall Screws Type S spaced 16″ o.c. in the field and vertical joints of the board. Apply the face layer vertically with vertical joints offset 24″ from base layer joints and staggered on opposite sides of the partition. Attach with 1⅝″ USG Drywall Screws Type S spaced 16″ o.c. in the field and vertical joints of the board.

mineral fiber sound deadening board erection

For two layer construction with mineral fiber sound deadening board, the base layer of sound deadening board shall be applied vertically with joints staggered on opposite sides of the partition. Board shall be attached to each side of metal studs with 1″ USG Drywall Screws Type S spaced not to exceed 27″ o.c. along vertical joints and at quarter and mid-points of panel height along intermediate stud. Place two screws at each end of board through runner 1″ from each vertical edge. Face layer shall be applied vertically with joints staggered from base layer joints and laminated to base layer using PERF-A-TAPE Joint Compound (embedding type). Face boards shall be fastened around perimeter with 1⅝″ USG Drywall Screws Type S spaced 12″ o.c.

chase wall erection

Chase wall partitions shall be aligned accurately according to the partition layout. A double row of floor and ceiling runners shall be securely attached 24″ o.c. to concrete slabs with concrete stub nails or power-driven anchors, to suspended ceilings with toggle bolts or staples, or to wood framing with suitable fasteners.

A double row of No. 158 metal studs shall be positioned vertically in the runners so that studs are opposite each other in pairs with the flanges pointing in the same direction. Space no greater than 24″ o.c. Anchor all studs to runner flanges with USG Metal Lock Fastener or by positive screw engagement through each stud flange and runner flange.

Cross bracing between the rows of studs shall be cut from (½″) (⅝″) SHEETROCK into minimum 12″ by chase width pieces and screw-attached to the stud webs at quarter points in the partition height, with USG Drywall Screws Type S—spaced 8″ o.c. in each stud web or a minimum of three screws per stud web.

drywall soffit erection

Drywall soffits shall be aligned accurately according to the partition layout. USG No. (158) (212) (358) metal runners shall be securely attached 24″ o.c. to concrete slabs with concrete stub nails or power driven anchors, to suspended ceilings with toggle bolts or staples, or to wood framing with suitable fasteners. On stud walls, space fasteners to engage each stud. On ceilings, place fastener close to outside face of runner.

Face panels shall be (½″) (⅝″) SHEETROCK Gypsum Wallboard. Fasten vertical face panel to web of face corner runner and flange of ceiling runner with 1″ USG Drywall Screws Type S spaced 12″ o.c. Insert USG No. (158) (212) (358) Metal Studs between face corner runner and sidewall runner and attach alternate studs to runners with the USG Metal Lock Fastener. Bottom face panel shall be attached to metal studs and runners with 1″ USG Drywall Screws Type S spaced 12″ o.c. Screws in the face corner runner shall be at least 1″ from the edge of the SHEETROCK panel.

wallboard accessories

a. PERF-A-TAPE or DURABOND Joint System shall be used on all face board joints and internal angles formed by the intersections of walls and ceilings.

b. Laminating Adhesive shall be PERF-A-TAPE Joint Compound (embedding type) mixed according to manufacturer's directions spread to provide adhesive beads ½″ high x 5/16″ wide at the base and spaced 4½″ o.c., or USG Laminating Adhesive applied in strips, 2′ o.c., running continuously from floor to ceiling. Each strip shall consist of four beads ½″ high and ⅜″ wide at the base and spaced 1½″ to 2″ o.c.

c. Metal Corner Bead No. (000000) shall be securely installed at all external corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. At least two coats of joint compound shall be applied over beads and each coat feathered out onto panel faces.

d. Metal Trim No. (000000) shall be securely installed where indicated. Finish with PERF-A-TAPE Joint Compound, as required.

e. Fasteners shall be as shown on drawings or as herein specified. Fasteners shall be driven not less than ⅜″ from ends or edges of wallboard to provide uniform dimple not over 1/32″ deep. Spot exposed fastener dimples on face layers with at least three coats of joint compound, feathered and sanded smooth.

f. Control Joints shall be provided in the face layer as indicated and shall consist of two pieces of Metal Trim back to back.

UNITED STATES GYPSUM

resilient channel system

partitions

a

1216

USG® Metal Stud Drywall

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
2 hrs. est	Met Stud—2 layers ⅝" SHEETROCK FIRECODE gypsum wallbd—3⅝" USG studs 24" o.c.—3" THERMAFIBER ins wool blkts—2 layers wallbd lamin one side—opp side 2 layers wallbd separ by RC-1 chan spaced horiz 24" o.c. screw att—face joints fin wt 12 width 6½"	TL-62-212 (s)	51		187	Second best value of drywall metal stud party walls in 50-54 stc range	a-1216
2 hrs. est	Met Stud—2 layers ⅝" SHEETROCK FIRECODE gypsum wallbd—3⅝" USG studs 24" o.c.—2 layers wallbd screw att one side—opp side 2 layers wallbd separ by RC-1 chan spaced horiz 24" o.c. screw att—face joints fin wt 12 width 6⅝"	TL-62-180 (s)	50		173		a-1216

description

This lightweight non-load bearing partition assembly consists of USG No. 358 Metal Studs, set in floor and ceiling runner tracks and faced each side with two layers of SHEETROCK* Gypsum Wallboard. On one side the face layer of SHEETROCK is separated from the base layer by RC-1 Resilient Channels horizontally applied. These resilient channels, roll formed from 25 gauge electro-galvanized steel, are ingeniously designed to improve sound transmission loss at an economical cost. Specially designed self-tapping steel screws with rust inhibitive coatings are used for attachment of wallboard and channels.

The steel channel studs, 3⅝" wide and roll formed from 25 gauge electro-galvanized steel, are available in lengths to suit job requirements and have holes punched 12" from each end to facilitate electrical installation. The partition, when completed with the PERF-A-TAPE* Joint System and DUR-A-BEAD* Corner Reinforcement, has a very good sound transmission class rating either with or without THERMAFIBER* Insulating Wool Blankets (see table above) and is especially recommended for party walls. A resilient non-hardening caulking compound is used at the partition perimeter and under floor and ceiling runners.

SHEETROCK for this assembly is ⅝" thick and is available in two types (see Specifications). Lower cost BAXBORD* Gypsum Backing Board may be used as a base layer in the construction. SHEETROCK FIRECODE* Gypsum Wallboards, which have a specially formulated core containing special mineral materials, generally obtain higher fire resistance ratings than plain SHEETROCK wallboard.

function and utility

Adaptable for use in virtually every type of new construction —commercial, institutional, industrial and residential—or alteration work for permanent space division, the partition offers effective, economical sound and fire control characteristics.

Sound Isolation—A sound transmission class of 51 has been obtained for the system with THERMAFIBER Blankets inserted in the air space between the studs.

Fire Resistant—Incombustible components are used in this system which is estimated to have 2-hour fire resistance.

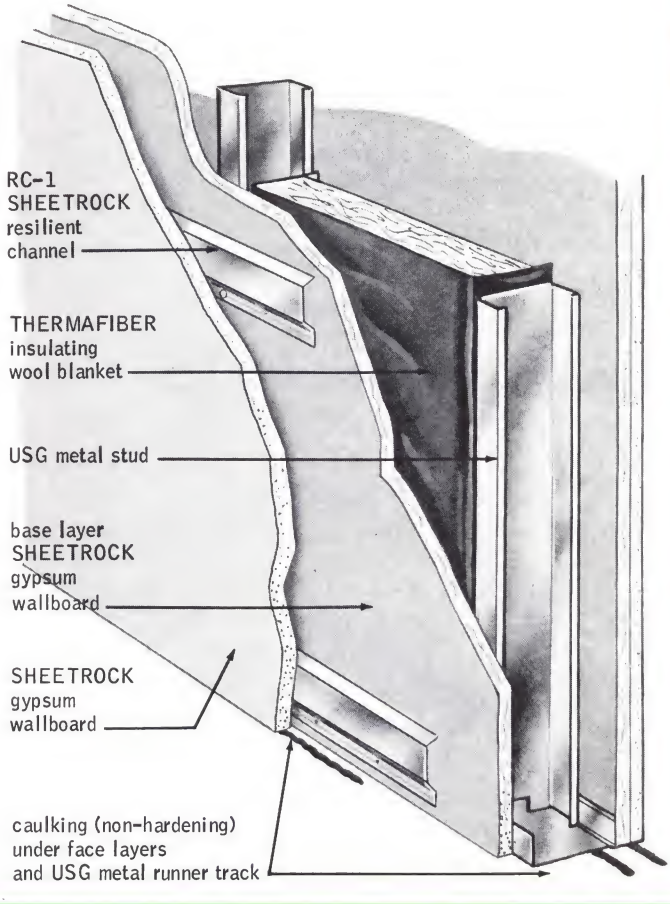
Economical—The low material cost and speed of erection possible with this system, together with its resistance to sound transmission and fire, gives this assembly an excellent sound-fire-cost value.

limitations

1. Non-load bearing.
2. The partition should not be used where normally exposed to excessive moisture or humidity.
3. Limiting height: 16′.
4. Maximum stud spacing: 24″ o.c.
5. The RC-1 Resilient Channel should not be attached directly to USG Metal Studs. Before RC-1 Channel is attached, the metal studs must first be faced with a layer of gypsum wallboard.

sound attenuation factors

test no.	method	decibel frequency in cps 125	175	250	350	500	700	1000	1400	2000	2800	4000	STC
TL-62-212	Lab	41	42	46	48	49	48	51	51	50	55	60	51
TL-62-180	Lab	36	38	41	46	47	48	52	54	50	52	58	50



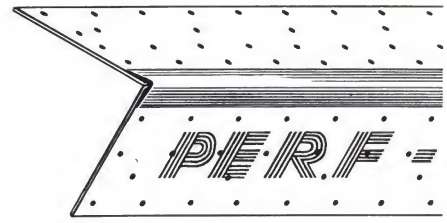
A.I.A. File No. 20-B-2.1

A.I.A. File No. 20-B-2.1

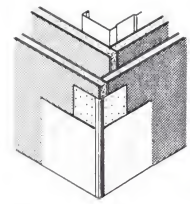
*Reg. U.S. Pat. Off.

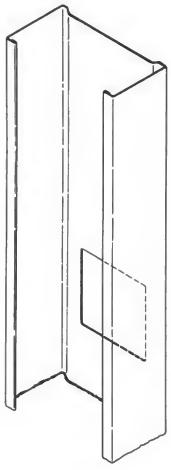
components

see "gypsum wallboard and joint treatment" product catalogs for full description on accessories & sizes



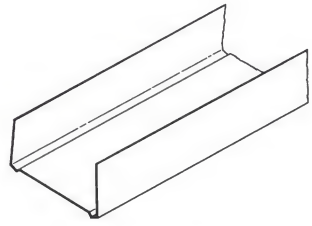
no. 100 PERF-A-BEAD



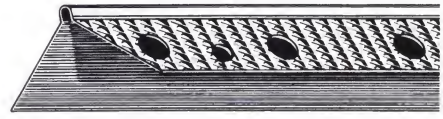


USG metal stud

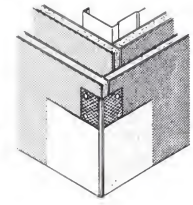
tapered edge
SHEETROCK gypsum wallboard

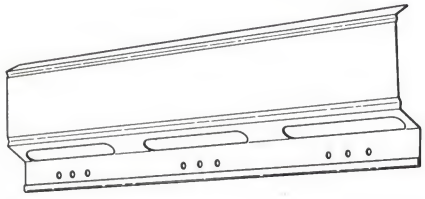


USG metal stud



DUR-A-BEAD corner reinforcement





RC-1
SHEETROCK
resilient
channel

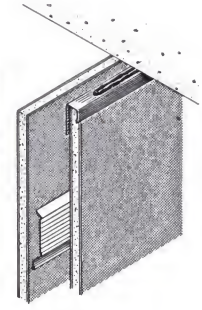
1″ USG drywall screw—type S—bugle head

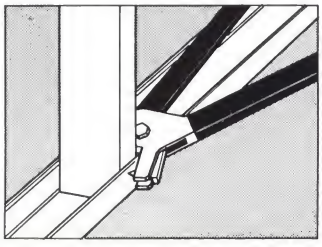
2¼″ USG drywall screw—type S—bugle head

1 ½″ USG drywall screw—type G—bugle head

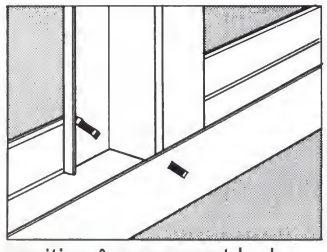
2¼″ USG drywall screw—type S—trim head

USG metal trim





pierces & folds light metals



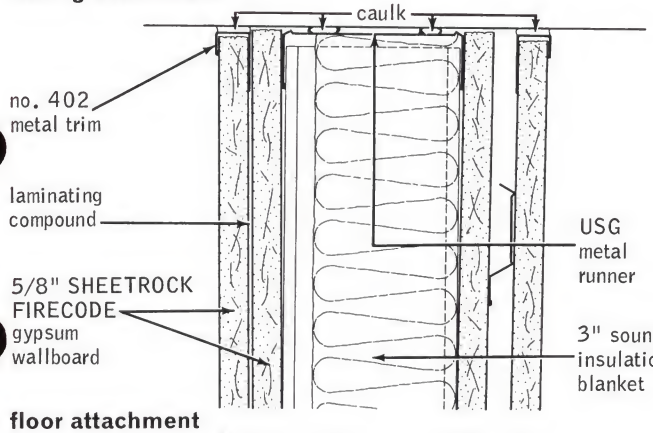
positive & permanent lock

USG metal lock fastener

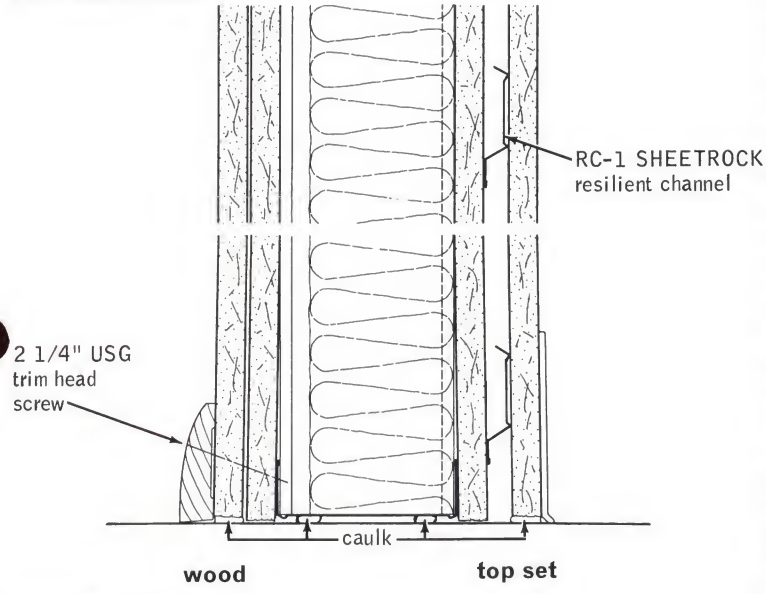
details

scale: 3″ = 1′-0″

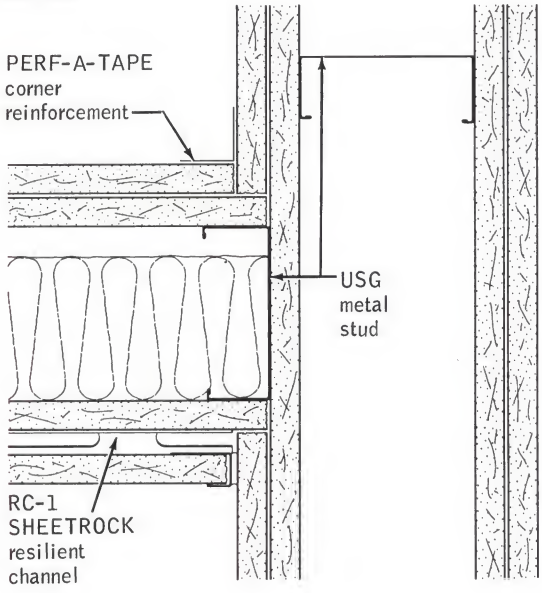
ceiling attachment



floor attachment



partition corner



specifications

notes to architect

1. *Door and borrowed light openings are not recommended when this partition is used as a party wall, since the sound control characteristics will be reduced. If required, details for door and borrowed light frames may be found in USG Metal Stud Drywall System (direct attachment) Folder.*

2. *Non-load bearing drywall partitions will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that wallboard surfaces be isolated from all structural elements where:*

a. *A partition abuts any structural element or dissimilar wall or ceiling assembly.*

b. *The partition construction changes within the plane of the partition.*

In long partition runs, control joints should be provided in the non-resilient face layer at intervals no greater than 30′ o.c.

3. *Holes cut in thin wallboard membrane cause a concentration of stresses in the wallboard typically at intersection of head and jamb. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

4. *Additional chases for electrical conduit or pipe can be provided by cutting round holes no greater in size than 75% of the stud width, located in the center of the stud web and spaced at least 12″ apart. Additional holes should not be cut where a fire rating is required.*

5. Ceramic Tile—*SHEETROCK W/R Gypsum Wallboard is recommended as a base for the adhesive application of ceramic, metal and plastic tile.*

6. *Where wood base is required, it should be applied with trim head screws placed at each stud location and midway between stud locations (12″ o.c.) and at other points where required.*

7. *Where this partition is used as a sound barrier, the use of caulking to seal all cut-outs, such as at the electrical fixtures and to seal all intersections with the adjoining structure, is recommended. Eliminate cutting holes back to back and adjacent to each other.*

8. *The addition of 3″ x 23″ x 96″ THERMAFIBER Insulation Blankets to the stud cavity, pressed tightly in place, stapled to the back side of one face of the partition will increase the sound transmission loss of the partition.*

9. Fixture Attachment—*Lightweight fixtures and trim should be installed using plastic plugs or other expandable anchors for screw attachment. Medium and heavy weight fixtures should be supported from the primary framing.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

general conditions

In cold weather and during the period of wallboard lamination and joint finishing, temperatures within the building shall be maintained uniformly with the range of 55° to 70° F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

materials

See USG Product Folders in this series:

Joint Treatment Folder for PERF-A-TAPE Joint System Specifications.

Gypsum Wallboard Folder for information on Wallboard System Components.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. Resilient Channels—RC-1 SHEETROCK Resilient Channel.

b. USG Metal Studs—No. 358 (3⅝″).

c. USG Metal Runner—No. 358 (3⅝″).

d. Faceboards—⅝″ thick, 48″ wide Tapered Edge SHEETROCK (Regular) (FIRECODE) lengths as required.

e. Backing Board—⅝″ thick, 24″ wide BAXBORD (Regular) (FIRECODE) 8′ lengths.

f. Laminating Adhesive—PERF-A-TAPE Joint Compound (embedding type) or USG Laminating Adhesive.

g. Joint Treatment—PERF-A-TAPE or DURABOND Joint System.

h. Fasteners—(specify type from page 2).

i. USG Metal Trim (No. 200-A) (No. 401) (No. 402).

j. USG Corner Bead—DUR-A-BEAD, PERF-A-BEAD*, Econo Corner Reinforcement.

k. Caulking—Presstite 579.64 Mastic as manufactured by Presstite Division of Interchemical Corporation or equal.

l. Insulation—3″ THERMAFIBER Insulating Wool Blankets 23″ x 96″.

stud system erection

All partitions shall be aligned accurately according to the partition layout. Floor and ceiling runners shall be securely attached 24″ o.c. to concrete slabs with concrete stub nails or power driven anchors, to suspended ceilings with toggle bolts or staples, to wood framing with suitable fasteners.

Studs shall be positioned vertically in the runners, spaced no greater than 24″ o.c. Anchor all studs located at partition intersections and corners to runner flanges with USG Metal Lock Fastener or by positive screw engagement through each stud flange and runner flange. When necessary, studs shall be spliced by nesting two studs with a minimum lap of 8″ and attaching flanges together with two screws in each flange.

Studs shall be located no more than 2″ from all abutting partitions, partition corners and other construction.

panel erection

Gypsum wallboard shall be applied with long dimension parallel to framing members, except for face layer attached to the resilient channels. All abutting ends and edges shall occur over stud flanges. Wallboard of the maximum practical length shall be used to minimize end joints. All end joints shall be neatly fitted and staggered. Joints on opposite sides of the partition shall be so arranged as to occur on different studs. Wallboard shall be cut neatly to fit around all outlets and switch boxes. Work done by this contractor shall be coordinated properly with that done by other trades.

Apply the base layer vertically with vertical joints staggered on both sides of the partition and screw-attach with 1″ USG Drywall Screws Type S spaced 16″ o.c. in the field and vertical joints of the board.

On the side opposite the RC-1 Resilient Channel apply the face layer vertically with vertical joints offset 24″ from base layer joints and staggered on opposite sides of the partition. Attach with 1⅝″ USG Drywall Screws Type S spaced 16″ o.c. in the field and vertical joints of the board, or laminate and hold in place with 1½″ USG Drywall Screws Type G. Screws along vertical edges shall occur 36″ o.c. maximum, within 2″ of joint and 12″ of both ends. Screws in field shall occur 48″ o.c. maximum and within 24″ of both ends.

Position the RC-1 Channels horizontally, space 24″ o.c. and attach to the metal studs with 1″ USG Drywall Screws Type S driven through the single ⅝″ base layer. The first RC-1 Channel shall be located at the floor line and a maximum of 6″ down from the ceiling line. When required, the resilient channel shall be spliced directly over the metal stud by nesting the channel and attaching both flanges to the stud.

wallboard accessories

a. PERF-A-TAPE or DURABOND Joint System shall be used on all face board joints and internal angles formed by the intersections of walls and ceilings.

b. Laminating Adhesive shall be USG PERF-A-TAPE Joint Compound (embedding type) mixed according to manufacturer's directions or USG Laminating Adhesive applied in strips, 2′ o.c., running continuously from floor to ceiling. Each strip shall consist of four beads ½″ high and ⅜″ wide at the base and spaced 1½″ to 2″ o.c.

c. Metal Corner Bead No. (000000) shall be securely installed at all external corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. At least two coats of joint compound shall be applied over beads and each coat feathered out onto panel faces.

d. Metal Trim No. (000000) shall be securely installed where indicated. Finish with PERF-A-TAPE Joint Compound, as required.

e. Fasteners shall be as shown on drawings or as herein specified. Fasteners shall be driven not less than ⅜″ from ends or edges of wallboard to provide uniform dimple not over 1/32″ deep. Spot exposed fastener dimples on face layers with at least three coats of joint compound, feathered and sanded smooth.

f. Control Joints shall be provided in the non-resilient face layer as indicated and shall consist of two pieces of Metal Trim back to back.

UNITED STATES GYPSUM

partitions

a

1286

SHEETROCK* Demountable System

GYPSUM WALLBOARD

A.I.A. File No. 35-H-6

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
1 hr.	Mov Demountable Partn—½" vinyl faced SHEETROCK FIRECODE gypsum wallbd & battens screw att—2½" USG met studs 24" o.c.—2" THERMAFIBER sound atten blkts wt 6 width 3½"	UL Des 21-1 hr (f)				Low cost—movable by owner's crew—only met. stud movable partn. with high sound & fire rating	
		TL-63-127 (s)	49		187		a-1286
N/A	Mov Demountable Partn—½" vinyl faced SHEETROCK FIRECODE gypsum wallbd & battens screw att—2½" USG met stud 24" o.c. wt 5½ width 3½"	TL-63-126 (s)	42		172	Same as TL-63-127 without wool—note stc difference	a-1286

description

The SHEETROCK Demountable Partition is a non-load bearing movable wall system designed for use in all types of commercial, industrial and institutional construction. This partition is a structurally sound, virtually 100% reusable wall that offers complete design freedom for ceiling, cornice or bank rail height.

Individual wall sections are erected from lightweight 2½" USG® Metal Studs spaced 24" o.c., set in USG Metal Runners, and faced both sides with screw attached Regular, Vinyl Panel, or Custom Vinyl SHEETROCK Gypsum Wallboard. Fasteners and abutting SHEETROCK edges are concealed with anodized aluminum battens and exterior corners fabricated to accommodate a vinyl insert giving the wall a modern, attractive appearance. Matching aluminum base, wall-ceiling trim, door assembly components and glazed opening components are the only other accessories required to complete this highly versatile partition system.

By using predecorated SHEETROCK Vinyl Panel or Custom Vinyl wallboard, available in a wide range of rich decorator colors, finishing time is reduced. The durable, washable surface of this material is easy to maintain and complements any commercial interior.

function and utility

Versatile—Suitable for use in modernization or in all types of new construction. The simplicity of design offers a completely flexible, virtually 100% reusable, movable partition. Utilities such as electrical outlets or communications wiring are easily installed, relocated and augmented. Vinyl Panel, Custom Vinyl and Regular SHEETROCK Gypsum Wallboard satisfies every design requirement and provides complete flexibility of finish. Available in ceiling height, cornice height and bank rail height assemblies.

Fire Resistant—Constructed of incombustible components; a 1-hour fire resistance rating has been established.

Sound Control—The construction described (see table above) has a 49 sound transmission class rating.

Lightweight—5.5 lbs. per sq. ft. when faced each side with ½" SHEETROCK.

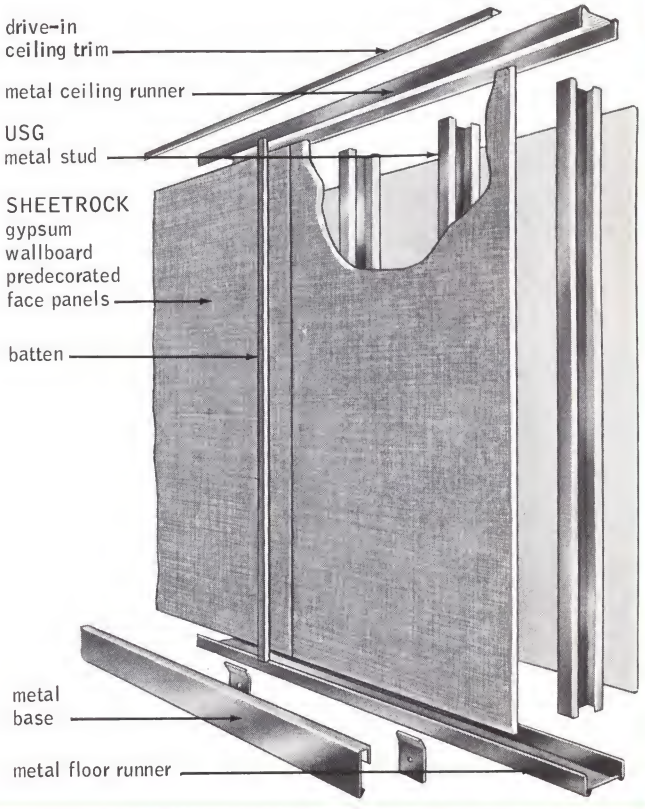
Economical—The small number of components required for this movable partition permits fast erection and saves job material costs. The ease of dismantling and relocation saves costly business interruptions and inconvenience during remodeling.

sound attenuation factors

test no.	method	decibel frequency in cps 125	175	250	350	500	700	1000	1400	2000	2800	4000	STC
TL-63-127	Lab	34	38	40	46	47	47	50	51	53	49	54	49
TL-63-126	Lab	22	28	32	38	43	44	46	48	46	41	45	42

limitations

1. Non-load bearing.
2. Not recommended for use where normally exposed to excessive moisture.
3. Limiting height (Ceiling Height Partition): 12′.
4. Because cornice and bank rail height movable partitions are more flexible than permanent partitions, certain precautions must be taken to resist lateral and impact loads (see Specifications, page 6).
5. Not recommended for use with full height glass panels.



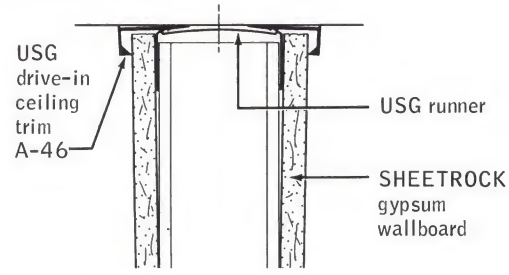
A.I.A. File No. 35-H-6

*Reg. U.S. Pat. Off.

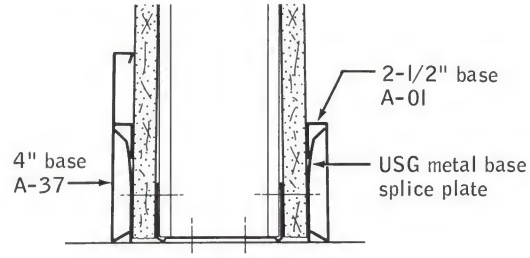
details—ceiling height

scale: 3″ = 1′-0″

ceiling attachment

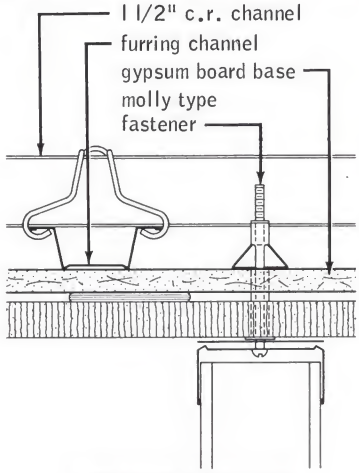


floor attachment

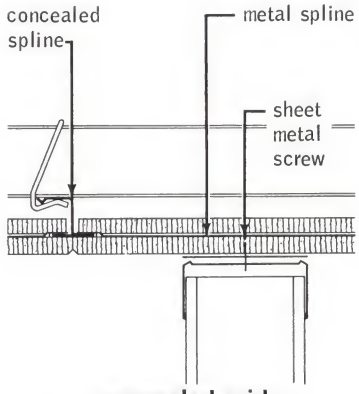


base

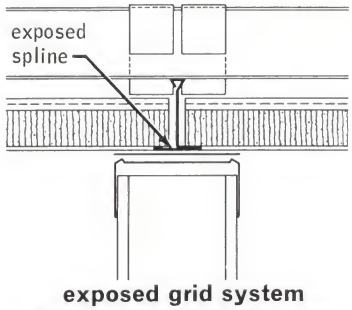
suspended ceiling attachments



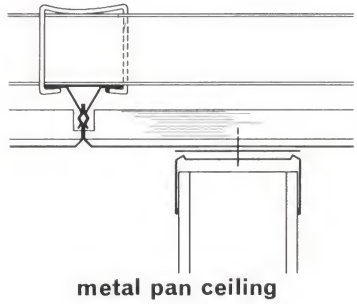
adhesively applied acoustical tile



concealed grid system for acoustical tile

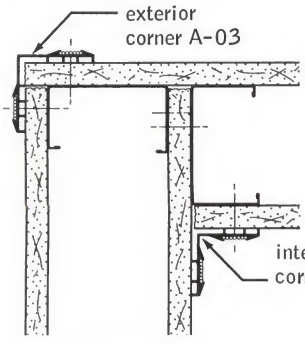


exposed grid system for acoustical tile & board

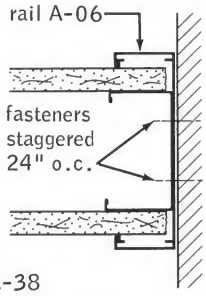


metal pan ceiling

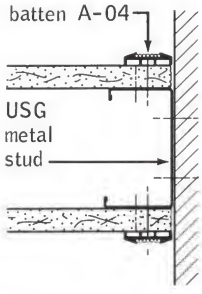
wall plan sections



internal; external corner

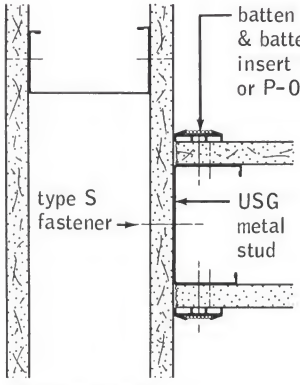


wall intersection (alternate)

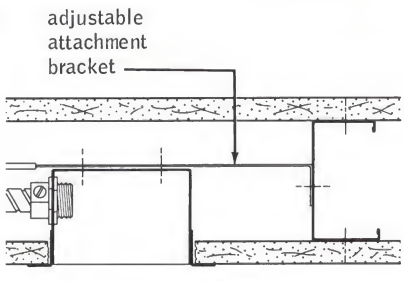


wall intersection

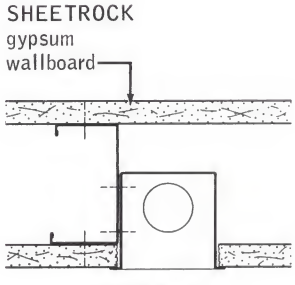
electrical outlets



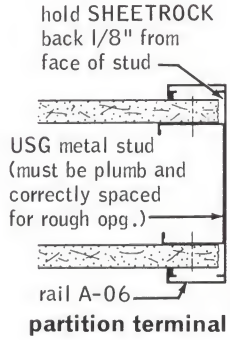
intersecting partition



outlet box



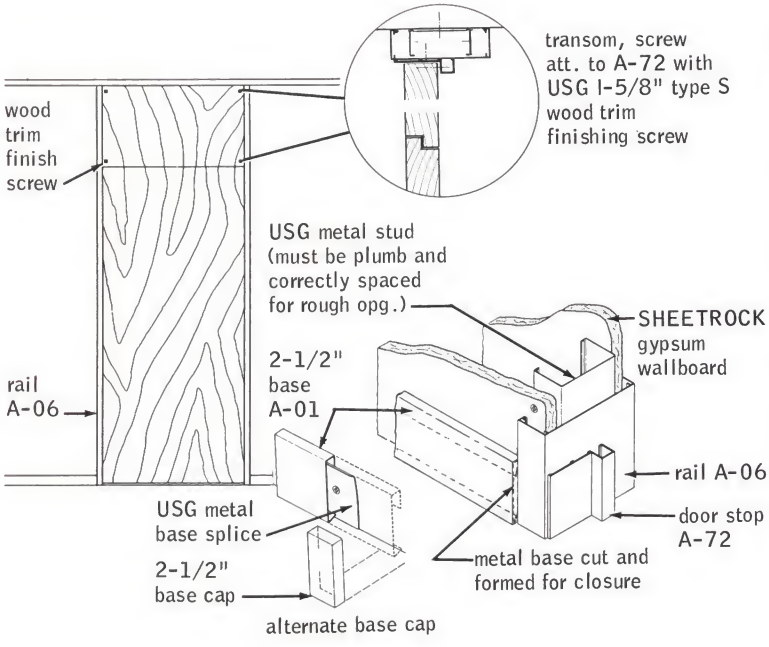
outlet box (alternate)

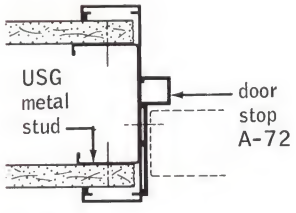


partition terminal

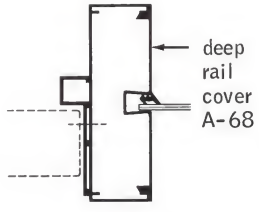
details

door frames





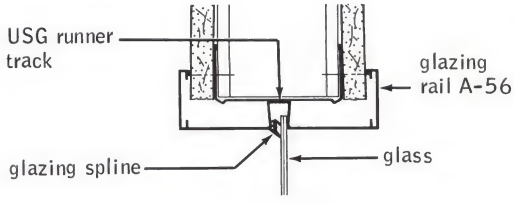
door jamb



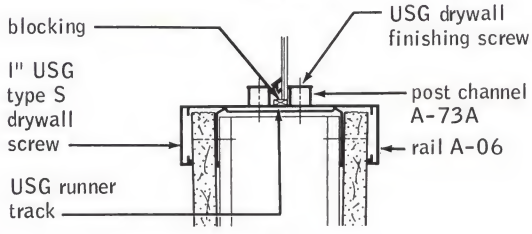
mullion (door & glass)

mullion (glass)

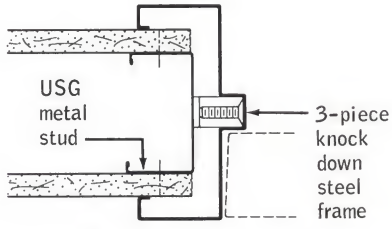
borrowed light opgs.



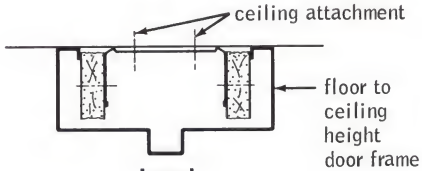
head



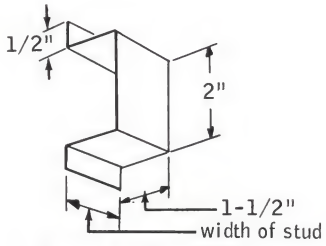
sill



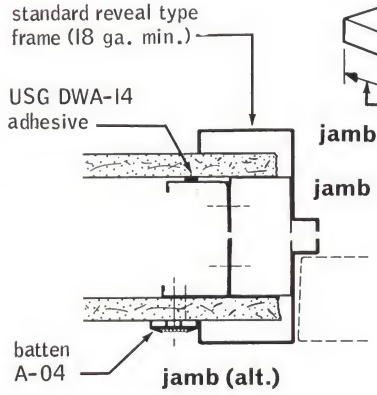
jamb



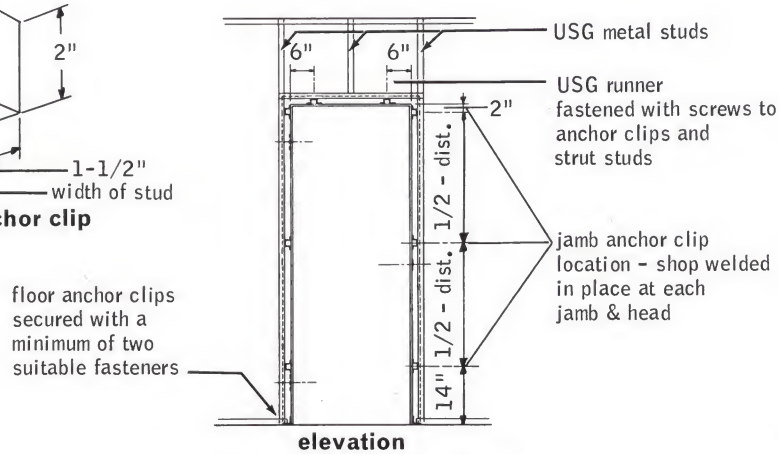
head



jamb anchor clip



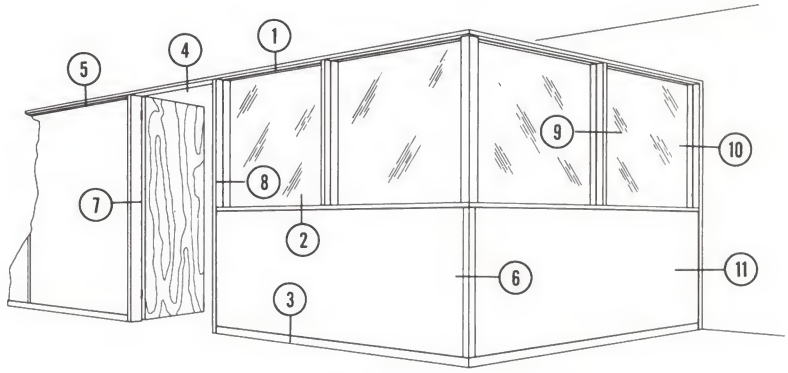
jamb (alt.)

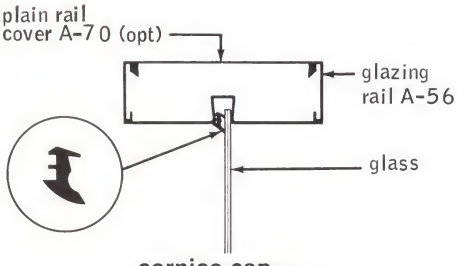


elevation
cross section thru door frame

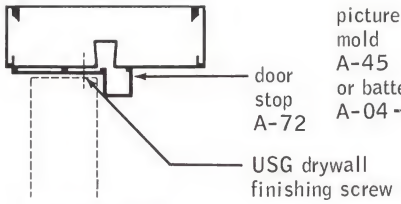
details—cornice height

scale: 3″ = 1′-0″

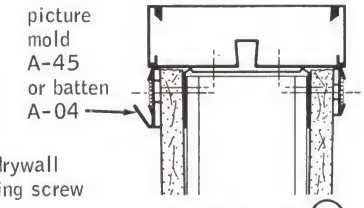




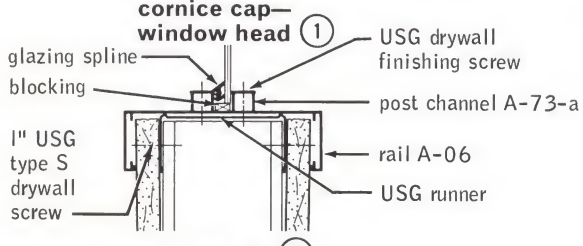
cornice cap—window head (1)



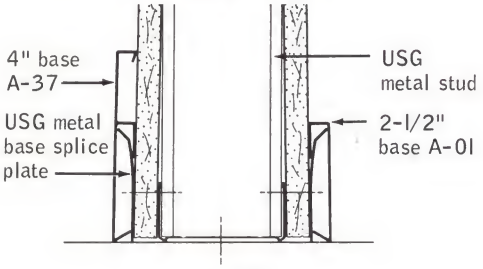
cornice cap—door head (4)



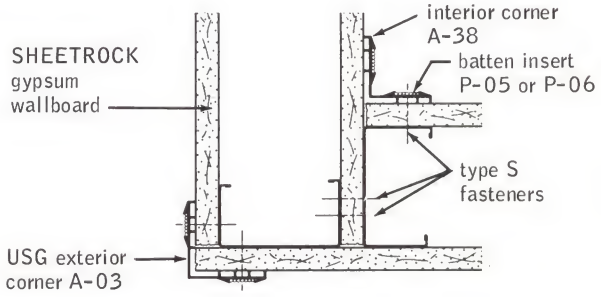
cornice cap (5)



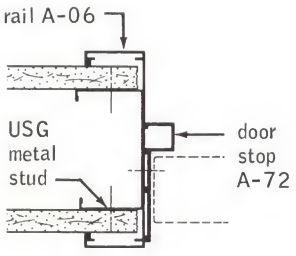
window sill (2)



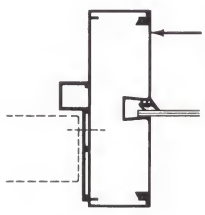
base (3)



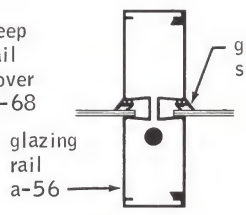
internal; external corner (6)



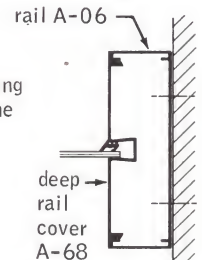
door jamb (7)



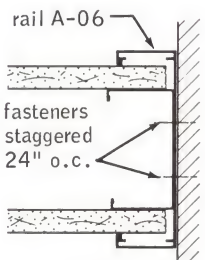
mullion (door & glass) (8)



mullion (glass) (9)

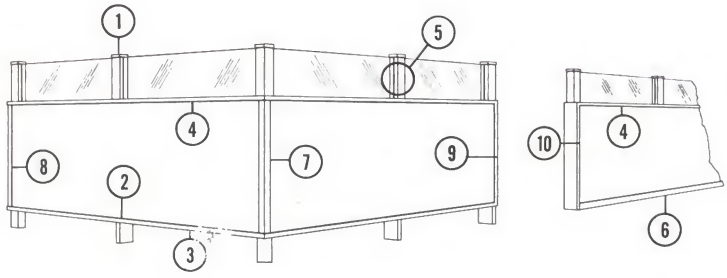


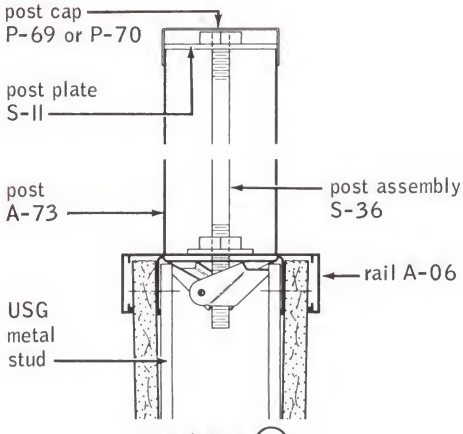
wall intersection (10)



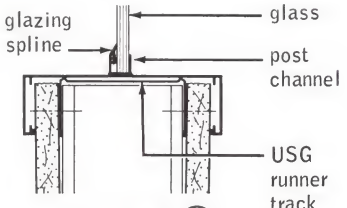
wall intersection (11)

details—bank rail

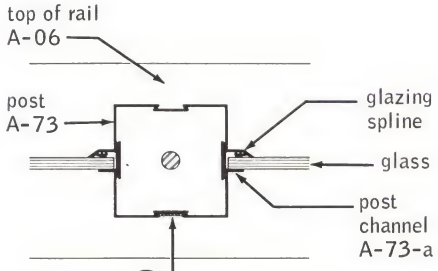




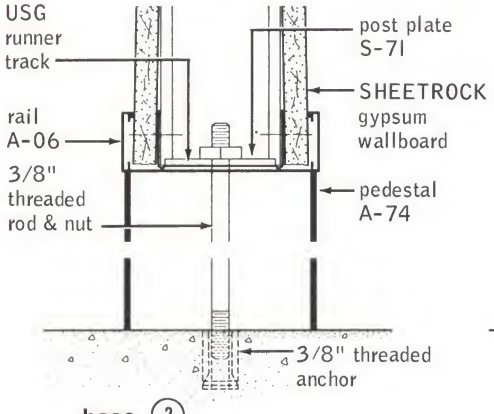
post cap (1)



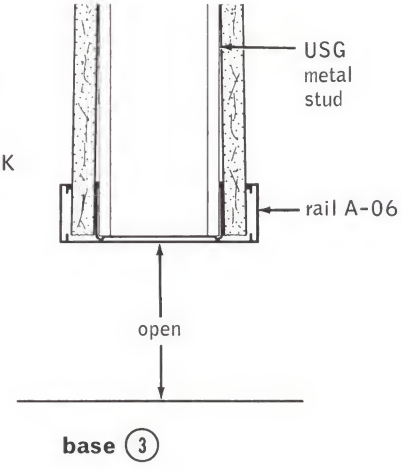
glazed rail (4)



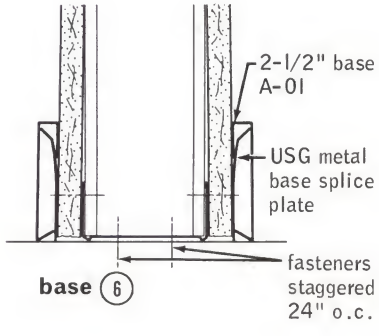
mullion (5)



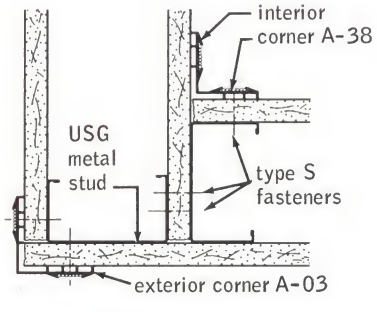
base (2)



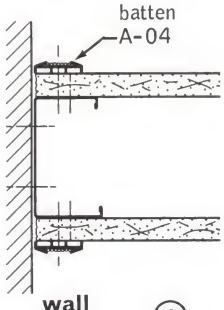
base (3)



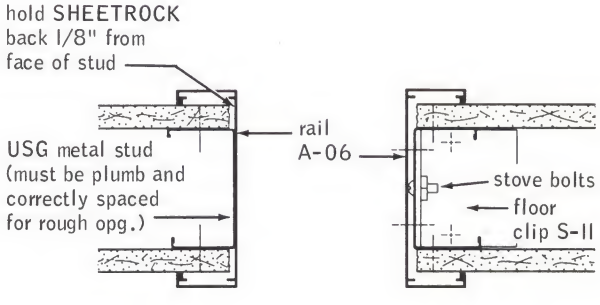
base (6)



internal; external corner (7)



wall intersection (8)



finished end (9) **finished end** (10)

*Reg. U.S. Pat. Off.

specifications

notes to architect

1. *Door frames constructed with the USG Rail A-06 and the USG Door Frame Assembly are recommended. USG Aluminum Door Framing Assembly will accommodate 1¾" hollow core doors only.*

On cornice height partitions, one-piece and three-piece door frames should not be used.

On ceiling height partitions, door frames other than the USG Aluminum Door Assembly may be used if desired. One-piece metal door frames should be formed from 18-ga. steel minimum, shop primed. The opening between the trim returns should be accurately formed to the overall thickness of the partition. The trim returns should be a minimum of 7/16" to allow the USG Aluminum Base to abut properly.

Floor anchor plates should be 14-ga. steel minimum, designed with two anchor holes to prevent rotation and welded to trim flanges to dampen door impact vibrations. Floor anchorage should be by two power-driven anchors or equivalent per plate. Jamb anchor clips should be formed of 18-ga. steel minimum, welded in the jamb and head (see detail page 3) and screw attached to the stud.

Door frame struts, when required, should be ¼" minimum thickness, hot rolled steel bar stock and of sufficient width to completely fill doorstop void, anchoring jamb securely. All door frame struts should be supplied as an integral part of the door frame.

Three-piece knock down steel door frames may be used on ceiling height partitions and should be installed according to manufacturer's directions.

Door closers and bumpers are required on all doors where the weight of the door (including attached hardware) exceeds 50 lbs.

2. *On cornice height partitions, the limiting unrestrained length between supports, including cornice height with door openings joined by continuous top rail, should not exceed 14'0". Rails should not be spliced within 14'0" unrestrained lengths.*

3. *On bank rail partitions a continuous Rail A-06 must be used to cap the partition. Maximum recommended partition length: 14' with both ends terminating against a perpendicular wall or column or corner section; 8' with one end terminating against a perpendicular wall, column or corner section.*

4. *Holes cut in a thin wallboard membrane such as door frames, borrowed lights, etc., cause a concentration of stresses in the wallboard. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses.*

5. *Additional chases for electrical conduit or pipe can be provided by cutting round holes no greater in size than 75% of the stud width, located in the center of the stud web and spaced at least 12" apart. Additional holes should not be cut where a fire rating is required.*

6. *Where this partition is used as a sound barrier, the use of caulking to seal all cut-outs, such as at electrical fixtures and to seal all intersections with the adjoining structure is recommended. Eliminate cutting holes back to back and adjacent to each other.*

For maximum sound isolation the partition should extend from structural slab to structural slab, closing all openings.

7. *The addition of 2" x 24" x 2½ lb. density THERMAFIBER* Sound Attenuation Blankets to the stud cavity, pressed tightly in place, stapled to the back side of one face of partition, will increase the sound transmission loss of the partition.*

8. **Fixture Attachment**—*Lightweight fixtures and trim should be installed using plastic plugs or other expandable anchors for screw attachment. Medium and heavy weight fixtures should be supported from the primary framing.*

9. *Where partitions are non-fire rated, attachment of the stud to the runner by piercing and crimping the flanges with the USG Metal Lock Fastener may be used.*

10. **Electrical Fixtures**—*The depth of electrical boxes should not exceed 2⅞". Boxes may be attached with suitable fasteners directly to adjacent vertical metal studs or to horizontal electrical straps spanning between studs.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

general conditions

In cold weather, the building shall be heated well in advance of and during the application of SHEETROCK Gypsum Wallboard and adhesives to maintain a temperature in the range of 55° to 70° F., and ventilation shall be provided to eliminate excessive moisture.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage, moisture and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

materials

See USG product folders in this series:

Paint Products Folder for Paint Specifications.

Gypsum Wallboard Folder and WB-765 Brochure for information on Wallboard System Components.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. Studs—25 ga. electro-galvanized steel USG Metal Stud No. 212 (2½").

b. Metal Runners—Floor and Ceiling, 25 ga. electro-galvanized steel USG Metal Runner, No. 212 (2½"), with 1¼" flange.

c. Gypsum Board—½" x 48" wide, square edge SHEETROCK Gypsum Wallboard (Regular or FIRECODE*); ½" x 48" wide SHEETROCK Vinyl Panel Gypsum Wallboard (Regular or FIRECODE); ½" x 48" wide SHEETROCK Custom Vinyl Gypsum Wallboard (Regular or FIRECODE).

d. Fasteners—1" USG Drywall Screws, Type S; ⅜" USG Drywall Screws, pan head, Type S-12 (for attachment of USG Metal Studs to door jamb, or head, anchor inserts); ⅞" Oval-Head (cadmium plated) USG Drywall Finishing Screws; 1¼" USG Drywall Bugle-Head Finishing Screws.

e. Adhesives—Water-based contact bond adhesive, such as 3-M Contact Bond Drywall Adhesive; SHEETROCK Brand DWA-14 Adhesive (for use around one-piece steel door frames only).

f. Plastic Accessories Adhesive—Sears Vinyl Household Adhesive, General Electric Silicone Rubber Adhesive, RTV-102 or equal.

g. Steel Accessories—

Post Plate	S-71	Rail Clip	S-70
Post Assembly	S-36	Floor Clip	S-11

*Reg. U.S. Pat. Off.

h. Aluminum Accessories—(Anodized)

2½″ Base	A-01	Picture Mold	A-45
4″ Base	A-37	Glazing Rail	A-56
Ceiling Trim	A-02	Glazing Rail Cover	A-68
Drive-In Ceiling Trim	A-46	Plain Rail Cover	A-70
Exterior Corner	A-03	Post	A-73
Interior Corner	A-38	Post Channel	A-73A
Batten	A-04	Door Stop	A-72
Rail	A-06	Pedestal	A-74

i. Vinyl (Plastic) Accessories—Batten Insert P-05 (grey), P-06 (black); Glazing Spline P-10 (black); Post Cap P-69 (grey), P-70 (black); 2½″ Base Closure Cap P-75, 4″ Base Closure Cap P-76.

stud system erection

All partitions shall be of the type herein specified and shall be aligned accurately according to the partition layout. Floor runners shall be securely anchored with suitable fasteners, spaced not more than 24″ o.c., and at corners and runner ends. On bank rail raised above floor, the bottom runner shall be centered within Rail A-06 and the assembly securely fastened to floor through Pedestal A-74 with a ⅜″ threaded rod.

Top runners shall be securely anchored to ceiling, Rail A-06, or Glazing Rail A-56 with suitable fasteners, spaced not more than 24″ o.c., and at corners and runner ends.

Metal studs shall be positioned vertically between top and bottom runners and spaced no greater than 24″ o.c. Install metal studs at corners, intersections and partition terminals, and anchor by attaching each stud flange to the runner flange with ⅜″ USG Drywall Screws, pan head, Type S-12. When necessary, studs shall be securely spliced with a minimum 8″ nested lap. At partition terminals, the web of the stud shall be at the terminal end with the flanges directed into the partition.

door and borrowed light frames

Door and borrowed light frames shall be rough framed with metal studs and runners. Studs shall be positioned vertically adjacent to door and borrowed light frames where wallboard is attached and shall be anchored securely to top and bottom runners at each opening. Sill and header sections fabricated from metal runners shall be provided over less than ceiling height door frames and above and below borrowed light frames where wallboard is attached. Fabricate from a cut-to-length section of runner with flanges slit and web bent to allow flanges to overlap adjacent vertical studs and securely attach to adjacent studs. Cut-to-length studs shall be positioned in the center above the door opening and above and below borrowed light openings no greater than 24″ o.c. At door openings anchor floor runner with two suitable fasteners at the jamb termination. Studs adjacent to one-piece door and borrowed frames shall be securely screwed or bolted to jamb and head anchor clips.

wallboard application

Gypsum wallboard shall be applied vertically with edges centered on the stud flanges and shall be attached with 1″ USG Drywall Screws, Type S, to both the top and bottom runners 12″ o.c., and at third points along vertical board edges. Screw attachment along vertical board joints at originating and terminating studs and around door and borrowed light frames shall be 12″ o.c.

Water-based contact bond adhesive shall be used to attach the center of the board to those studs where the wallboard is not mechanically attached.

Where a one-piece steel door frame is used the gypsum wallboard shall be attached with a ⅜″ bead of DWA-14 Adhesive applied to the full length of the metal stud.

On glazed cornice height and bank rail height partitions, wallboard shall be horizontally installed in as long lengths as possible.

cornice cap installation

The cornice cap shall be positioned horizontally on top of the partition and shall be Rail A-06 on the unglazed and Glazing Rail A-56 on the glazed cornice height partition. Corners shall be neatly mitered.

sill cap installation

The sill cap shall be positioned horizontally on top at the wainscot portion of the glazed ceiling height partition and shall be Rail A-06. Corners shall be neatly mitered.

partition terminal installation

Ceiling height partition—Terminal shall be finished by fitting Rail A-06 over the end of the partition and fastening securely at top and bottom with two ⅞″ USG Drywall Oval-Head Finishing Screws.

Cornice height partition—Terminal shall be a continuous Rail A-06 fitted over the partition, attached at the floor with two ⅞″ USG Drywall Oval-Head Finishing Screws, and attached at the ceiling by engaging two Rail Clips S-70 secured with appropriate fasteners to Glazing Rail A-56.

Bank rail partition—Floor Clip S-11 shall be positioned over runner and securely fastened to floor with two suitable anchors to prevent rotation. (Floor Clip is not required when bank rail is raised above floor.) A continuous Rail A-06 with corner coped and bent shall be used for the top rail and the terminal cap.

Bottom of vertical Rail A-06 shall be fastened to stud with two 1¼″ USG Drywall Bugle-Head Finishing Screws. Rail Cap A-06 shall be secured with Glazing Post Assembly.

door assembly installation

Ceiling height partition—The rough door opening shall be trimmed at both sides and at head with sections of Rail A-06. Screw-attach Rail A-06 and Door Stop A-72 to Rail A-06 with ⅞″ USG Drywall Oval-Head Finishing Screws.

For full-height door openings, the rough opening shall be trimmed at ceiling line and at jambs with continuous sections of USG Rail A-06. Screw attach Rail A-06 and Door Stop A-72 as described above. Rubber door buttons shall be inserted in predrilled holes which are located on strike side of Door Stop A-72. Fixed transoms when required shall be set in place and securely attached to the Door Stop A-72 (ceiling line and jambs) with 1⅝″ USG Type S Wood Trim Screws.

Cornice height partition—The rough door opening shall be trimmed on both sides with Rail A-06 positioned vertically, fastened at bottom with two ⅞″ USG Drywall Oval-Head Finishing Screws and attached at the top by engaging two Rail Clips S-70 secured with appropriate fasteners to Glazing Rail A-56. Door Stop A-72 shall be fastened to vertical Rail A-06 and Glazing Rail A-56 with ⅞″ USG Drywall Oval-Head Finishing Screws.

borrowed light assembly installation

Borrowed light openings shall be trimmed with Glazing Rail A-56 or Glazing Rail Cover A-68 for vertical and head sections and Rail A-06 for horizontal sill sections.

Intermediate mullions shall be assembled using Post Assembly S-36 and Post Plate S-71 positioned vertically between cap and sill, tightened in place and trimmed with Glazing Rail A-56 and Glazing Rail Cover A-68 snapped in place. Two Rail Clips S-70, positioned to engage each end of the Glazing Rail, shall be screwed to cap and sill with two ½″ USG Pan Head Screws per clip.

glazing corner post installation

Post A-73 shall be installed plumb and fastened to Rail A-06 (and Glazing Rail) with Post Assembly S-36 and Post Plate S-71. Post Channel A-73A shall be cut-to-length and inserted in groove in Post A-73.

partition accessories

a. Aluminum Ceiling Trim A-02 shall be installed to ceiling runner and studs where indicated on the drawings with the USG Metal Lock Fastener spaced 24″ o.c. Punchouts shall not interfere with wallboard placement.

b. Drive-In Ceiling Trim A-46 shall be installed where indicated on the drawings *after* wallboard is erected.

c. Picture Mold A-45 shall be applied horizontally at the ceiling line where indicated on the drawings, with 1″ USG Drywall Screws, Type S, spaced 12″ o.c.

d. Metal Base Splice Plates shall be installed 24″ o.c. and at corners, partition terminals and base splices, with 1″ USG Drywall Screws, Type S.

e. Aluminum Base (A-01, 2½″) (A-37, 4″) shall be notched to a neat miter in forming exterior corners, evenly butted at interior corners and held in place by engaging splice plates. In continuous runs ends shall be evenly butted and internally spliced with a splice plate.

f. Base Cap (P-75, 2½″) (P-76, 4″) shall be adhesively attached over ends of metal base with caps snugly abutting vertical rails.

g. Interior Corner A-38 shall be installed in one piece over wallboard at all interior corners with 1″ USG Drywall Screws, Type S, spaced 12″ o.c.

h. Exterior Corner A-03 shall be installed in one piece over wallboard at all exterior corners with 1″ USG Drywall Screws, Type S, spaced 12″ o.c.

i. Batten A-04 shall be installed to cover screw heads at vertical board joints and at intermediate studs when adhesive attachment is not used. Fasten with 1″ USG Drywall Screws, Type S, spaced 12″ o.c.

j. Batten Insert (P-05) (P-06) shall be installed in all Battens, Exterior and Interior Corners, and Picture Moldings.

k. Post Caps (P-69) (P-70) shall be adhesively attached to ends of Post A-73 on bank rail partition.

l. Glazing Accessories—Post Channels A-73A with counterbored holes to receive ⅞″ USG Drywall Oval-Head Finishing Screws spaced 1″ from ends of channel and no more than 16″ o.c. and appropriate screws shall be provided as required for glazing.

UNITED STATES GYPSUM

partitions **a**

VAUGHAN WALLS®

MOVABLE GYPSUM PARTITIONS

1296

A.I.A. File No. 35-H-6

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
2 hrs. est	Mov VAUGHAN WALLS—double drywall sound wall—spec ⅝" USG gypsum wallbd face panels lamin to ⅝" gypsum core strips placed to form panel joints—2 rows spaced 2⅛" apart—2" THERMAFIBER sound atten blkts in chase—V-joints unfin wt 13 width 6"	TL-65-72 (s)	50		266	Excellent corridor or party wall; higher sound resistance, wider chase space than TL-64-189	a-1296
1 hr. est	Mov VAUGHAN WALLS—double drywall sound wall—spec ⅝" USG gypsum wallbd face panels lamin to ⅝" gypsum core strips placed to form panel joints—2 rows spaced 1⅜" apart—V-joints unfin wt 13 width 5⅛"	TL-64-189 (s)	45		234	Good corridor partition	a-1296
1 hr.	Mov VAUGHAN WALLS standard solid drywall partn—spec ⅝" USG gypsum wallbd face panels lamin to spec 1" USG gypsum core units 24" wide—V-joints unfin wt 10 width 2¼"	T-1235-OSU (f) U of C 5-24-65 (f) TL-64-213 (s)	36		188	Aluminum trim used in U of C fire test; steel trim in OSU test. Vinyl-faced panels used in sound test	a-1296
1 hr.	Mov VAUGHAN WALLS pre-chased drywall partn—spec ⅝" USG gypsum wallbd face panels lamin to spec 1" USG gypsum core strips placed to form panel joints—V-joints unfin wt 7 width 2¼"	UL Des 22-1 hr (f) TL-64-212 (s)	36		166	Panel edges screw att. at qtr. points in fire test. Vinyl-faced panels used in sound test	a-1296
N/A	Mov VAUGHAN WALLS pre-chased drywall partn—spec ⅝" USG gypsum wallbd face panels lamin to spec 3-ply 1¾" lamin core strips of gypsum bd & USG wd fiber sound dead bd—sound dead bd also lamin to back of 1 panel in chase—perim caulked wt 8 width 3"	TL-65-208 (s) TL-65-190 (s)	39 39		210	#800 series chase wall—V-joints finished in TL-65-208, unfinished in TL-65-190	a-1296

description

Movable VAUGHAN WALLS are non-load bearing movable drywall partitions consisting of two basic components: modular gypsum panels, floor and ceiling runners. Special USG® gypsum wallboard panels are laminated into units suitable for ceiling or cornice height and bank rail partitions. Various types of construction are available: standard wall—solid core, 2¼" thick; chase wall—semi-solid core, 2¼" thick; #800 series—3" semi-solid chase wall; and sound wall—two 1⅞" thick semi-solid units with 1⅜" air space between, to meet varying sound control requirements (see table above).

VAUGHAN WALL panels are of modular design consisting of three layers of gypsum wallboard laminated to form tongue and groove edges. All face panels are mill fabricated with beveled longitudinal edges. Metal components are available in extruded aluminum with exposed members etched and anodized to provide a neutral satin gray finish requiring little maintenance, or in shop-primed steel ready for final painting. Corners and intersections are completed with the PERF-A-TAPE* Joint System and DUR-A-BEAD* Corner Reinforcement for lasting protection.

This system has fewer components than other movable walls, fits height requirements up to 14′ and combines with a wide variety of materials: glass, wood veneers, vinyl or fabric for unlimited architectural expression.

Installation is available through dependable contractors carefully selected and trained as authorized erectors of Movable VAUGHAN WALLS by Vaughan Walls, Inc. Their qualified services include assistance in architectural detailing, original installations and future relocation of partitions to suit changing space requirements.

function and utility

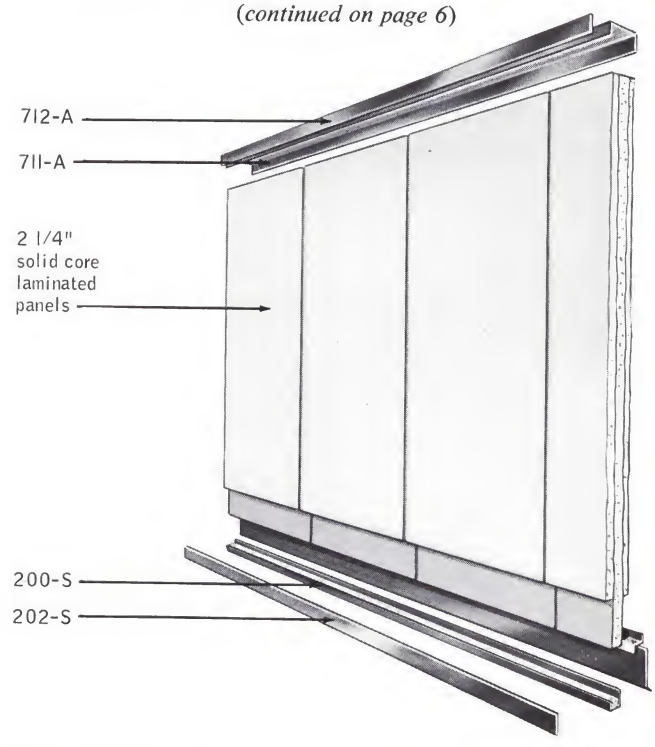
Adaptability—VAUGHAN WALLS may be used in new construction or for modernizing old buildings. They form any partition of ceiling height or less, and offer complete flexibility in locating glazed panels and doorways. They require no expansion or control joints with standard "V" joint walls.

Incombustibility—Movable VAUGHAN WALLS consist of aluminum and steel components, and gypsum wallboard . . . recognized fire resistant material.

Fire Resistance Rating—VAUGHAN WALLS with USG Gypsum Wallboard have successfully passed one-hour fire resistance tests conducted by a nationally recognized laboratory; one double sound wall has an estimated 2-hour rating (see table).

Impact Noise—Solid gypsum gives Movable VAUGHAN WALLS a feeling and sound of substance and permanence.

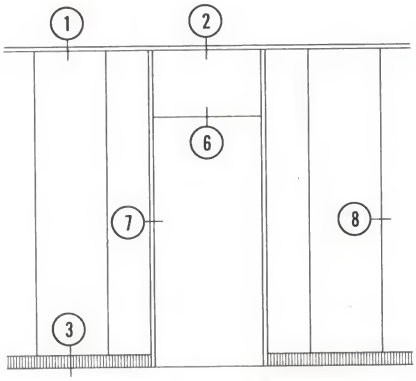
(*continued on page 6*)



A.I.A. File No. 35-H-6

*Reg. U.S. Pat. Off.

elevations & details



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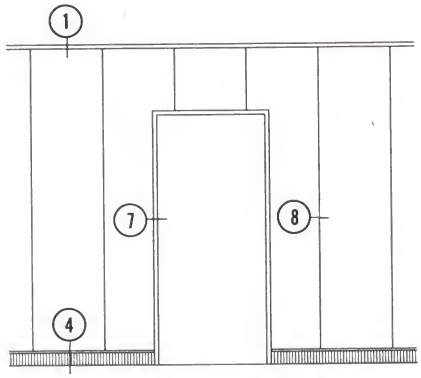

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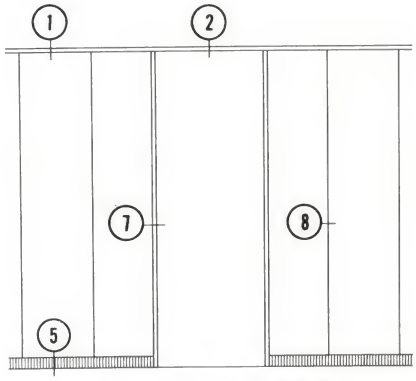

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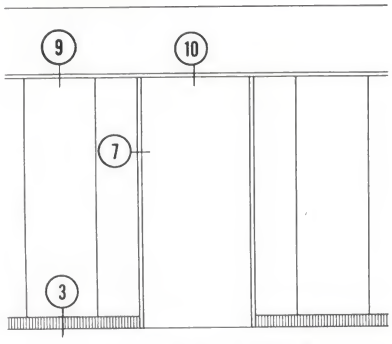

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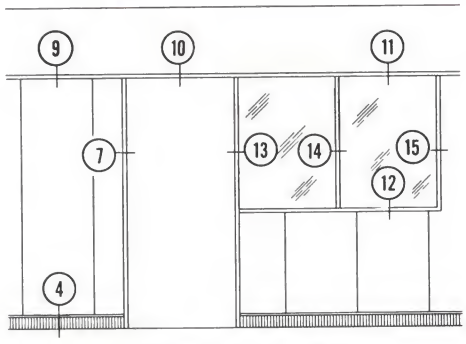

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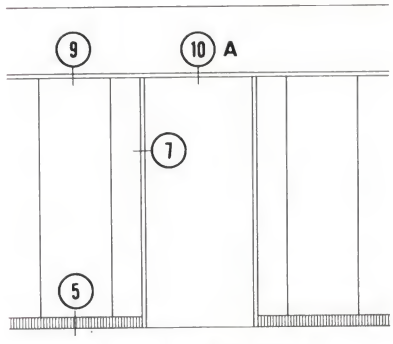

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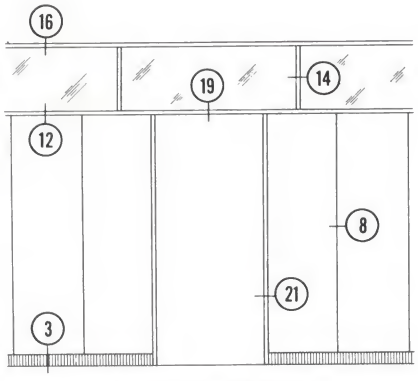

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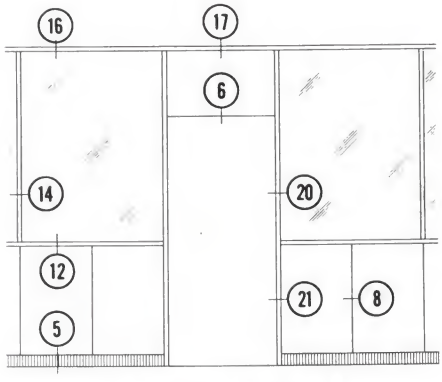

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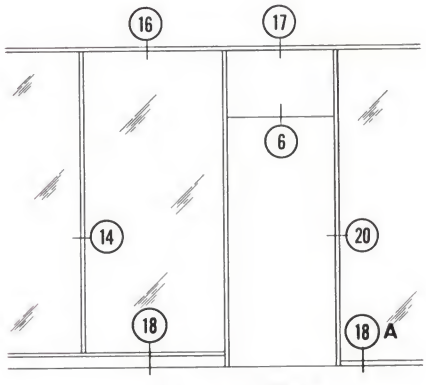

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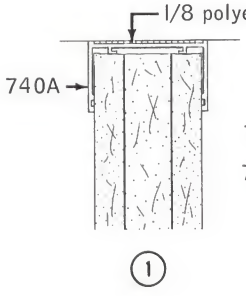

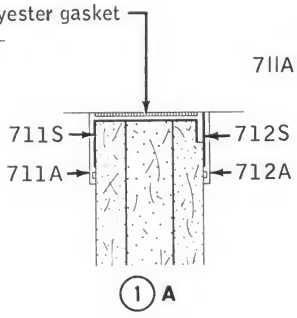

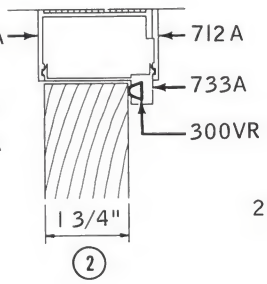

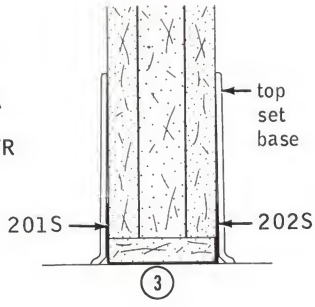

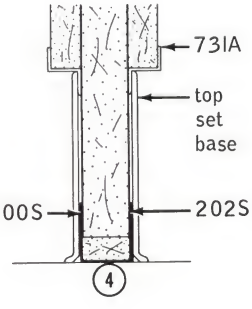

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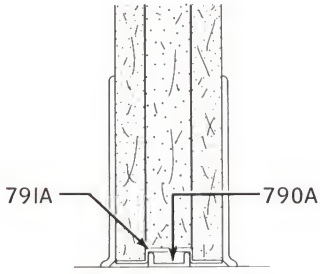

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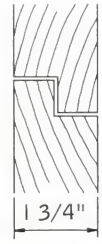

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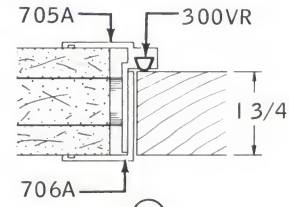

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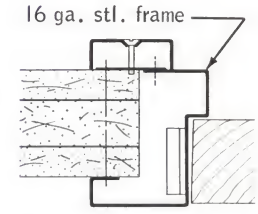

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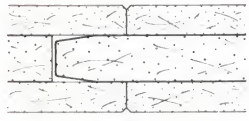

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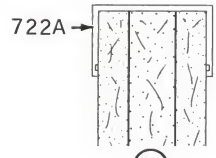

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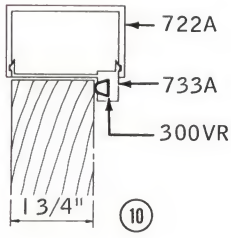

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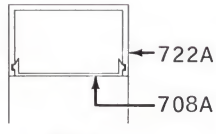

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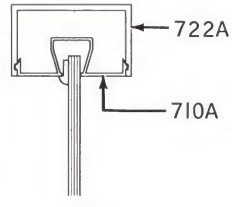

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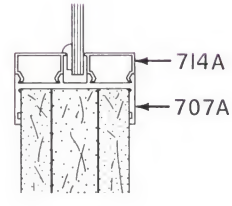

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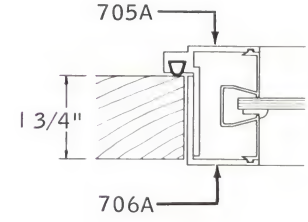

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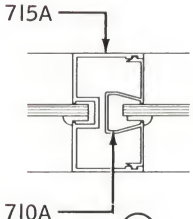

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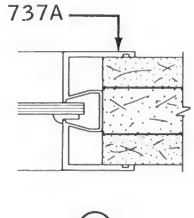

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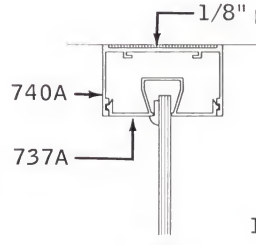

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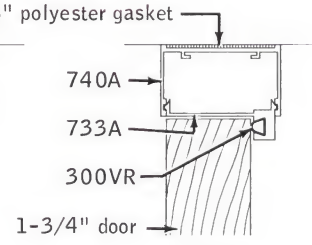

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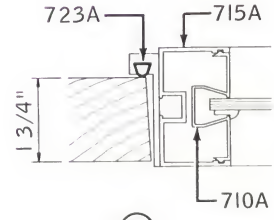

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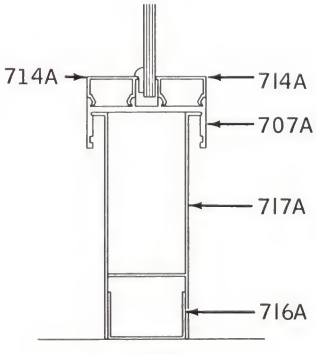

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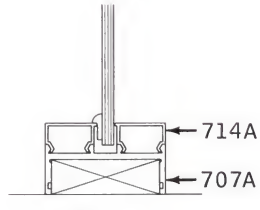
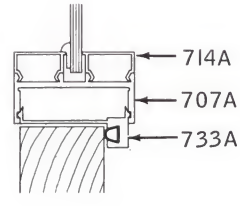


18 A



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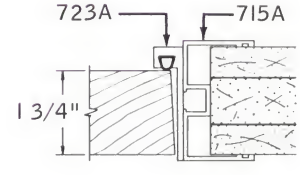
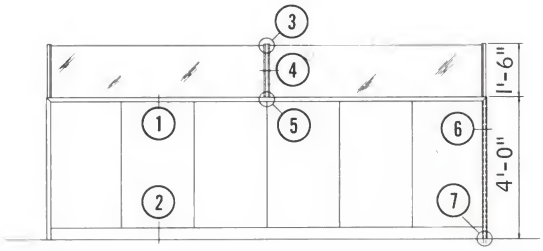


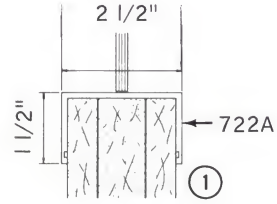
21

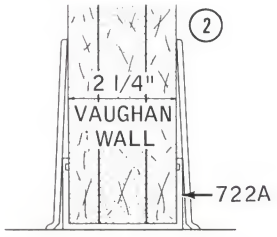
elevation & details

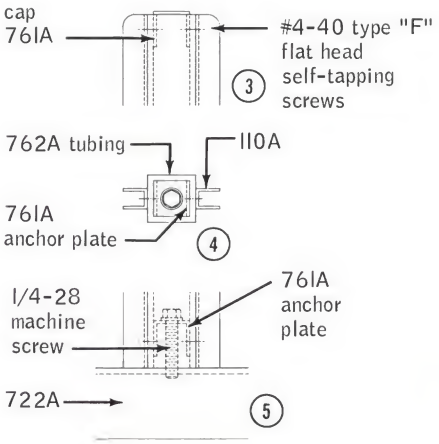
scale: 3" = 1'-0"

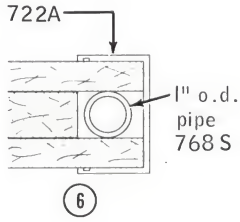


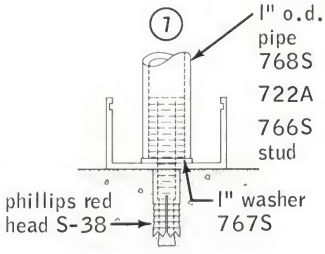
note:
sections
6 & 7 are
req'd. at
ends of
free
standing
partitions



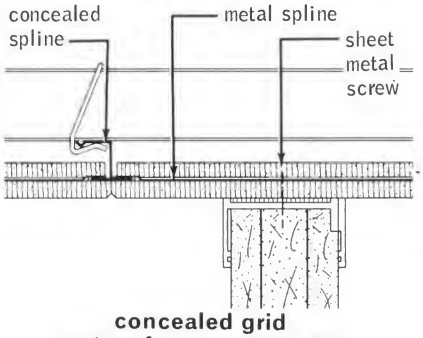




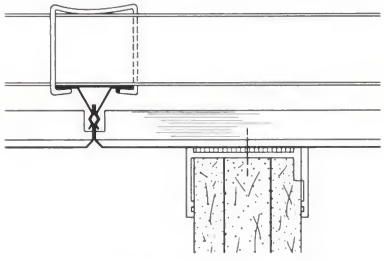




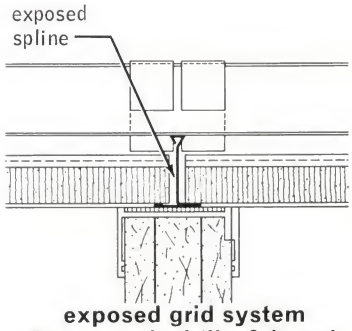
suspended ceiling attachments



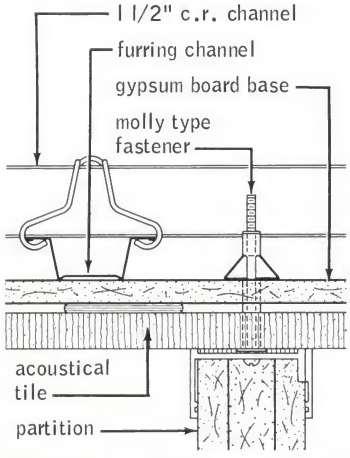
concealed grid system for acoustical tile



metal pan ceiling

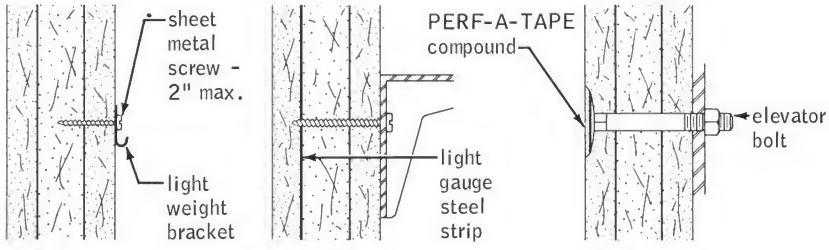


exposed grid system for acoustical tile & board



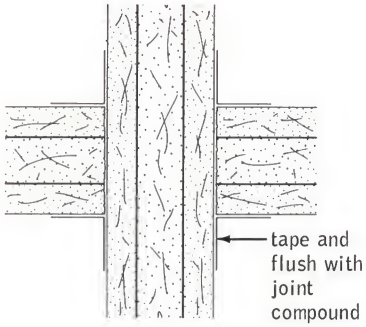
adhesively applied acoustical tile

fixture attachment

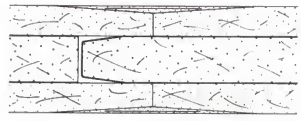


light **moderate** **heavy**

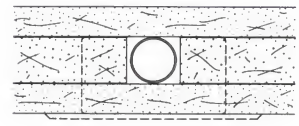
details



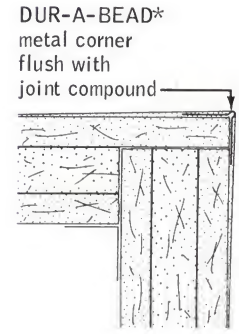
intersection



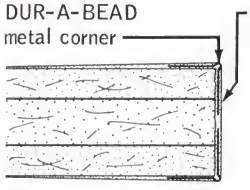
(flush) joint detail



electrical panel

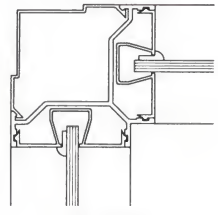


corner

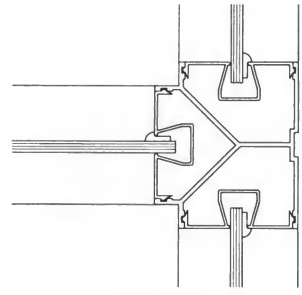


(for aluminum terminal
see detail #9 page 3)

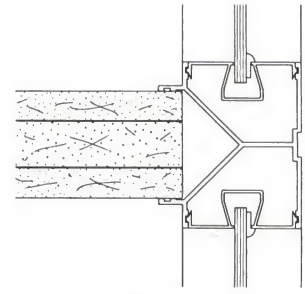
terminal



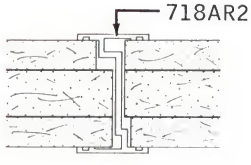
glazed corner



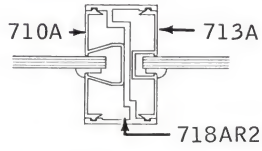
glazed intersection



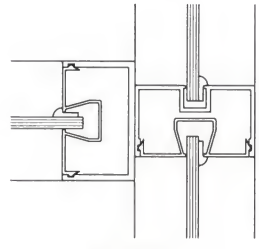
glazed intersection



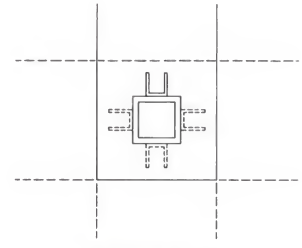
stiffener



alternate mullion



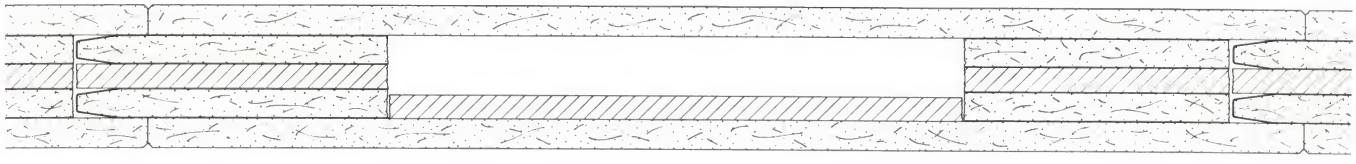
glazed intersection



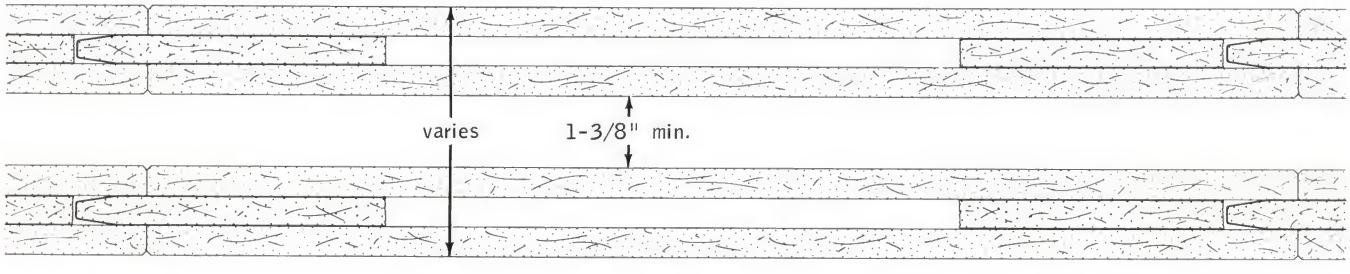
glazed 1, 2, 3, & 4 way

800 series systems

3″ pre-chased wall—horizontal cross section



5⅛″, 5¼″, or 6″ pre-chased wall—horizontal cross section



*Reg. U.S. Pat. Off.

function and utility (*continued from page 1*)

Sound Transmission Loss Ratings—The sound transmission loss rating of VAUGHAN WALLS as normally constructed is better than that possible to obtain in most movable partitions without costly modifications. Special VAUGHAN WALL constructions increase sound transmission loss values to 45 and 50 STC (table, page 1).

Appearance—Aluminum trim gives a pleasing accent to partition perimeters when panels are decorated. Steel trim can easily be painted to match, harmonize or contrast with the final finish selected for the panels. VAUGHAN WALL authorized erectors offer mounted wood veneers or plywood panels adhesively applied for special effects.

Economy—Tailor-made Movable VAUGHAN WALLS are laminated from locally stocked materials. Unexpected job problems or changes in layout are easily handled without costly delays in job progress. This partition is easily and speedily erected permitting early occupancy and a saving in erection labor. VAUGHAN WALLS are readily adaptable to the changing needs of area layout and are nearly 100% salvageable.

limitations

1. VAUGHAN WALLS are intended to be used only as non-load bearing walls.

2. Maximum height is 14′ for standard wall; 12′ for chase wall and 10′ for sound wall. When the rigidity of a permanent partition is desired, maximum height shall be 10′, and perimeter restraint must be provided. Where sound walls are required for sound isolation between units, the partition may be extended from slab to slab and maximum height of 12′ is permissible if restraint is provided by a suspended ceiling at a 10′ height or less.

3. Maximum unsupported run for less than ceiling height and glazed cornice height partition is 14′.

4. They should not be used where normally exposed to excessive moisture or humidity.

5. Floor anchor spacing of bank rail partition not to exceed 8′-0″ on centers.

sound attenuation factors

test no.	method	decibel frequency in cps										STC
		125	175	250	350	500	700	1000	1400	2000	2800	4000	
TL-64-213	Lab	34	35	34	37	37	39	38	36	39	43	45	36
TL-64-212	Lab	31	31	24	35	38	37	41	40	38	41	45	36
TL-65-190	Lab	26	24	27	36	38	37	39	43	43	48	51	39
TL-65-208	Lab	24	24	26	37	38	37	39	42	41	47	52	39
TL-64-189	Lab	36	35	35	39	45	50	51	56	53	56	57	45
TL-65-72	Lab	37	40	37	46	54	56	56	57	56	59	62	50

specifications

notes to architect

1. *The systems for the work of this section shall be the product of an established partition contractor who can furnish supporting evidence of having erected partitions and finishes and other related work similar to the type herein specified which have been in satisfactory use for not less than one year. Such evidence shall be by way of a list, photographs or cuts of projects which shall be furnished to the architect and owner.*

2. Electrical Wiring—*The one-inch core of the panel is routed during the job-lamination process to accept electrical wiring and outlet boxes. This permits flexibility in location of all utility and service requirements. Electrical outlets may be positioned anywhere in the panel for maximum convenience to the user.*

3. Fixture Attachment—*The standard VAUGHAN WALL is structurally sufficient to support light and heavy duty fixtures such as cabinets, book shelves, etc. The maximum allowable load (direct withdrawal) per anchor for commonly used anchors in VAUGHAN WALL is:*

a. *¼″ elevator bolt (min. ¾″ head diameter)—100 lbs.*

b. *1″ No. 8 sheet metal screw, driven through the face panel into a minimum 4″ x 4″, 24-ga. sheet metal plate (laminated between core and face layer)—50 lbs.*

c. *2″ No. 10 sheet metal screw, hand-driven to avoid stripping panel core and surface paper—25 lbs. (metal plate not required).*

The total allowable withdrawal load (load perpendicular) per 2″ wide standard VAUGHAN WALL Panel is 100 lbs., max.

4. Paint—*One coat of SHEETROCK* Sealer and 1 coat of GRAND PRIZE* paint, or 1 coat of TEXOLITE* Alkyd Latex, or 1 coat of flat oil paint is recommended. Apply in accordance with manufacturer's directions (see USG Paint Products Folder for complete Paint Specifications.)*

The most expedient way to obtain additional information on fire ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill., 60606, or a VAUGHAN WALLS authorized erector.

general conditions

All Movable VAUGHAN WALLS shall be installed by an Authorized Erector. Temperatures within the building shall be above a constant minimum of 55 degrees Fahrenheit during lamination and erection of partition panels. When required, heat shall be furnished by . . . Erection of partition panels shall not begin until erection of exterior walls and glazing or temporary covering of exterior openings provide complete protection from outside weather. Coreboard and face panels shall not be stored where they will be subjected to continuous or extreme exposure to excess moisture or temperature extremes.

workmanship

VAUGHAN WALLS shall be installed by skilled craftsmen under the supervision of an individual who has had on-the-job training satisfactory to VAUGHAN WALLS, INC. Complete partitions shall be fully movable, plumb, clean, free from defects and ready for decoration.

scope

The authorized erector shall furnish all labor, materials and equipment necessary to complete all VAUGHAN WALLS (laminated gypsum board movable partitions) aluminum and glass partitions including glass and glazing, door frames, window frames, doors, transoms, wood veneers, vinyl wall covering, painting of walls and finishing of wood and other items (topset base, cabinet work and finish hardware) as may be required to complete the VAUGHAN WALLS installation.

Work not included:

1. Ceilings and construction thereof.

2. Electrical and plumbing work.

3. Hoisting facilities including operating engineer.

shop drawings

Submit for architect's approval details of all metal components showing attachments to adjacent work and to each other

*Reg. U.S. Pat. Off.

when so required by the architect or owner, or a full size mock-up when the job warrants.

materials

a. Partition panels shall be jig-laminated to form 24″ wide panels (nominal).

1. Standard panels shall consist of VAUGHAN WALLS 1″ Gypsum Coreboard faced both sides with ⅝″ VAUGHAN WALLS FIRECODE* Gypsum Panels manufactured within tolerances for this system by United States Gypsum.

2. Chase wall panels shall be semi-solid and consist of VAUGHAN WALLS 1″x6″ (nom.) Gypsum Coreboard strips spaced 12″ apart (nom.) and faced both sides with ⅝″ VAUGHAN WALLS FIRECODE Gypsum Panels.

3. Sound wall panels shall be semi-solid and consist of VAUGHAN WALLS ⅝″x6″ (nom.) Gypsum Coreboard Strips spaced 12″ apart (nom.) and faced both sides with ⅝″ VAUGHAN WALLS FIRECODE Gypsum Panels.

b. Adhesive shall be VAUGHAN WALLS Brand neoprene base contact adhesive, or other formulations as approved by VAUGHAN WALLS, INC.

c. Metal Components shall be furnished by the authorized erector and shall comply with standards approved by VAUGHAN WALLS, INC.

1. Aluminum shall be extruded from 6063-T5 alloy and shall have a buffed and satin anodized finish, Alcoa #204-C1-R1. Commercial tolerances shall apply. Minimum thickness shall be .125″, except (a) glazing closure plates which are a combination of .094″ and .125″. Fasteners shall be aluminum, or cadmium plated.

2. Alternate Steel

a. Runners shall be roll formed from paint lock type steel of not less than 18 ga.

b. Door frames shall be two-piece hollow metal construction, fabricated of steel of not less than the following gauges: Frames—16 ga.; Closures—14 ga.; Hinge Reinforcement—9 ga.; Strike Reinforcement—12 ga. All door frames shall receive a factory prime coat of paint.

d. Finishing Accessories (reinforcing tape, joint finishing compound, filling compound and metal corner beads) shall be as manufactured by United States Gypsum Company or equal.

e. Wood shall be ⅛″x24″ wide architectural veneers applied directly to VAUGHAN WALLS with VAUGHAN WALLS Brand Adhesive. (Type of wood and finish as desired.)

f. Vinyl. Vinyl wall coverings as selected by the architect shall be (supported type, wrapped on Vaughan Face Panels prior to erection) (unsupported vinyl, factory applied by the face panel manufacturer). Face panels with unsupported vinyl wall coverings shall be laminated to the Coreboard with water-suspended adhesive as approved by VAUGHAN WALLS, INC. Adhesives containing any volatile solvents shall not be used.

installation

1. Partitions shall be accurately laid out, and the floor and ceiling runners securely anchored. Such attachment shall assure complete security of the partition and future removal and relocation without excessive damage to the floor or ceiling construction.

2. Gaskets (foam type polyethylene or similar) shall be installed between all ceiling runners and ceiling surfaces and elsewhere as required by job conditions. Such gaskets shall be 1¼″ wide and with minimum thickness of ⅛″ for steel installations and 3/16″ for aluminum installations.

3. Filler Strips shall be of ⅝″ gypsum wallboard cut to size and laid out in floor runners where required.

4. Partition Panels shall be formed and laminated in special jigs to insure a constant dimension at the tongue and groove. The coreboard shall be offset from the face panels to form a groove 1½″ deep. Panels shall be installed in floor and ceiling runners to form tight joints with true vertical and horizontal alignment.

5. Aluminum Door Frames (3′-0″ x 7′-0″) shall be assembled plumb and square. Frames shall be fastened with wood screws into 1″ x 3″ long dowels let into coreboard. Five dowels per jamb and two per head will be used as required. Bottom of frames shall be anchored to the floor runner.

6. Closure Plates shall be screwed securely to short legs of floor and ceiling runners. Full-length closure plates shall be used where practical. Cut ends shall be square and clean, fitting neatly to adjacent plates, trim, door frames, etc.

7. Joint Compound shall be applied to beveled joints of panels, to insure proper bridging of paint. Excess cement shall be wiped from the joint, leaving the true "V" bevel.

8. Metal Corner Bead shall be securely installed at all external corners. At least two coats of joint compound shall be applied over beads and each coat feathered out onto panel faces.

9. Reinforcing Tape and Joint Compound shall be applied as recommended by United States Gypsum Company, to all internal corners and intersections where flush finishing is desired or metal trim is not specified.

UNITED STATES GYPSUM

partitions **a**

E-Z WALL MOVABLE PARTITION SYSTEM

1306

A.I.A. File No. 35-H-6

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
N/A	Mov E-Z WALL Drywall Partn—concealed "H" studs 24" o.c.—2" THERMAFIBER sound atten blkts—¾"x24" bevel edge panels mill lamin—joints unfin wt 7 width 3⅝"	USG-93-FT-G&H (s)	45		180	Versatile movable partn.—variety of style combinations	a-1306
45 min.	Mov E-Z WALL Drywall Partn—concealed "H" studs 24" o.c. bridged—2" THERMAFIBER sound atten blkts—¾"x24" bevel edge panels mill lamin—joints unfin wt 7 width 3⅝"	UL Des 6-45 (f)	45 est		186		a-1306

description

The E-Z WALL Movable Partition is a non-load bearing, flush-panel-type construction, 3⅝" thick, with four basic components. This simplified design, available in ceiling, cornice or bank rail height, offers a fast solution to space control and relocation problems in offices, commercial buildings and institutions.

The partition is constructed of strong, incombustible laminated USG® gypsum board panels set in continuous runners and held in place with concealed open web steel H-studs spaced 24" o.c. The openings in the roll-formed H-shaped stud and the hollow construction provide ample accommodations for electrical wiring. The E-Z WALL panels, with edges beveled and integrally grooved to engage the stud, are mill laminated using two pieces of ⅜" thick gypsum board. The laminated panels, ¾" thick by 24" wide and mill cut to stock lengths are available in a choice of finishes—mill-laminated vinyl-faced panels (including Walnut pattern) or plain panels ready for painting or other decoration. Openings for door and borrowed lights are neatly formed and trimmed flush with E-Z WALL extruded aluminum accessories. All exposed aluminum members are etched and anodized a neutral gray finish to assure long life and little maintenance.

E-Z WALL Movable Partitions are installed exclusively by experienced partition contractors.

function and utility

These modern movable partitions are designed for sound and space control in remodeling or in all types of new commercial, industrial, and institutional construction. They fit all standard ceiling grid modules, and offer all the advantages of permanent partitions plus the following features:

Simplicity—E-Z WALL has simplified multi-purpose components that assure faster, easier, more economical assemblies and relocations.

Flexibility—E-Z WALL Panels allow relocation of all units without need for special panel sizes and fillers.

Sound Control—E-Z WALL construction, exclusive of openings, has a 45 sound transmission class (STC) with 2"x24" THERMAFIBER* Sound Attenuation Blanket inserted in the partition cavity. The standard partition, without blankets, has a 39 STC.

test no.	method	decibel frequency in cps 125	175	250	350	500	700	1000	1400	2000	2800	4000	STC
USG-93-FT-G&H	Lab	26	27	38	44	46	49	47	48	43	44	45	45

Easy Maintenance—Vinyl-faced E-Z WALL panels, etched and anodized aluminum members, and recommended vinyl top set base provide easy maintenance. Optional plain E-Z WALL panels may be painted and washed time after time.

Neat Appearance—Structural attachments concealed within partition—no visible fasteners are used.

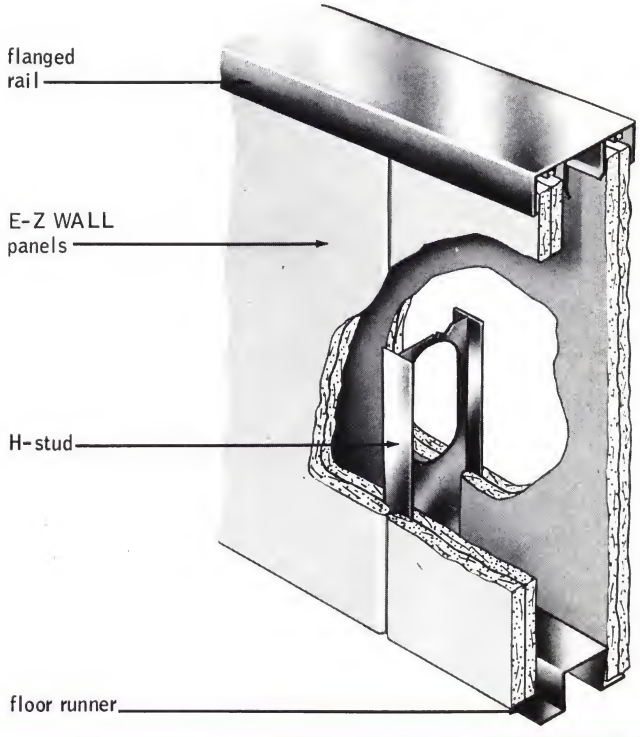
Fire Protection—Fire-resistant gypsum board panels; every component part is incombustible. Choice of 30-min. or 45-min. fire rated floor-to-ceiling partition.

Economy—Simplicity of erection and re-location, lower initial cost plus lower maintenance expense, provide greater long-range economy.

limitations

1. Non-load bearing.
2. Not recommended where exposed to excessive moisture.
3. Limiting height: 12′ for Ceiling Height Partitions; 48" for unglazed Railing Height.
4. Limiting unrestrained length between supports of Cornice Height Partitions, including those with door openings joined by continuous top rail, shall not exceed 14′0".

The E-Z WALL partition construction is covered by Patent No. 3,027,605.

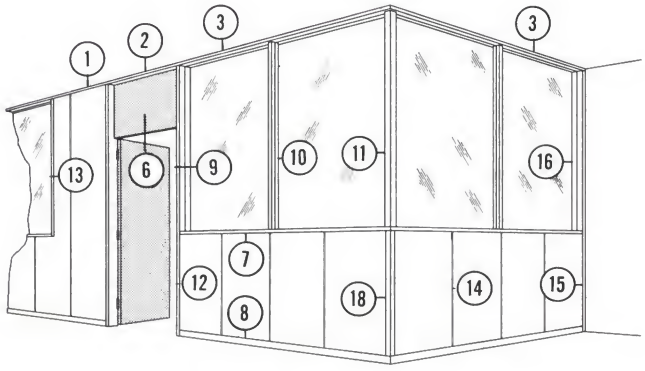


A.I.A. File No. 35-H-6

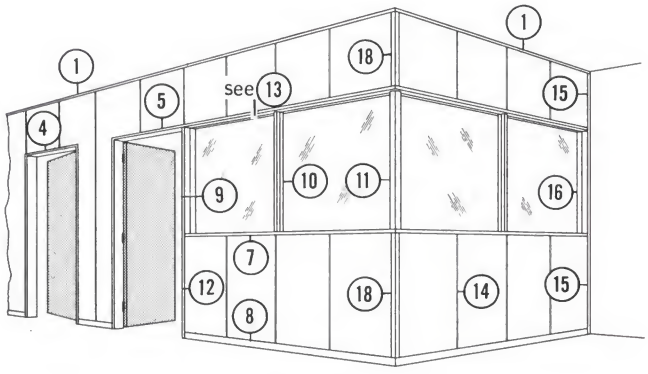
*Reg. U. S. Pat. Off.

elevations & details

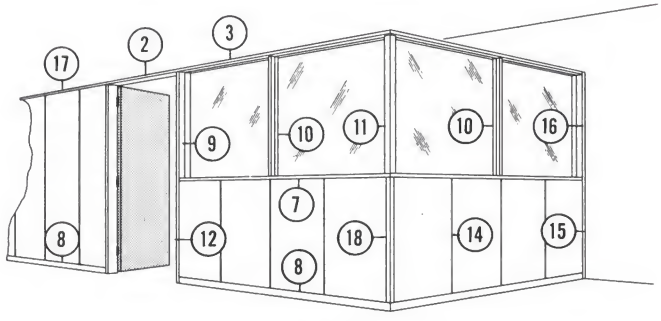
scale: 3″ = 1′ - 0″



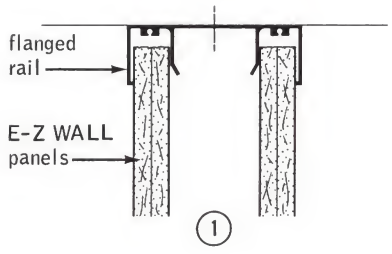
ceiling height

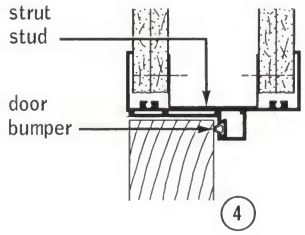


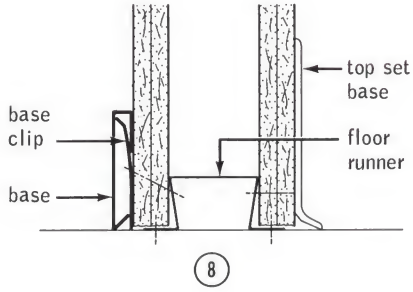
ceiling-cornice height

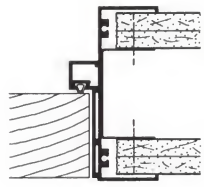


cornice height









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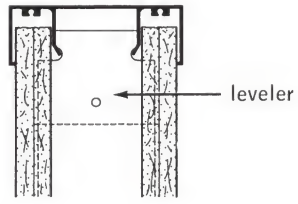
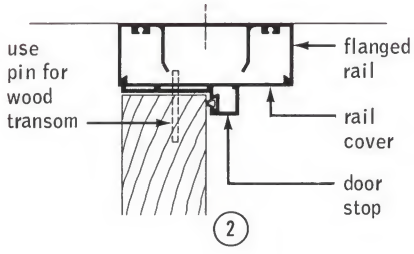


details



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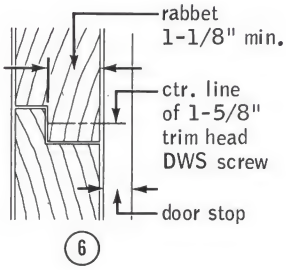

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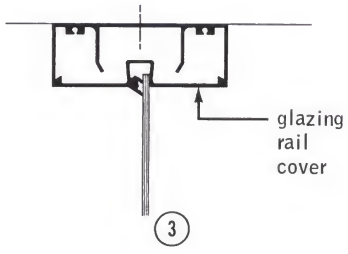

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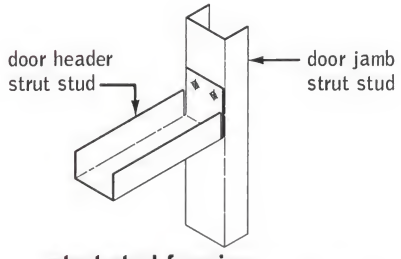
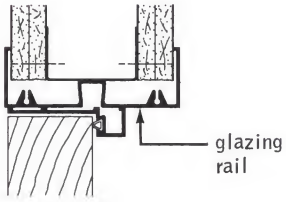


strut stud framing at door head—see detail 4



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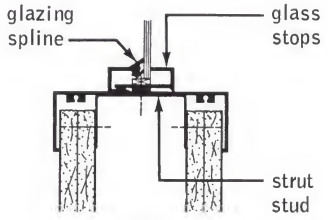

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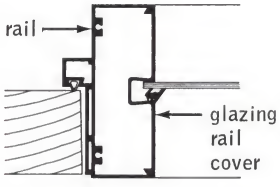

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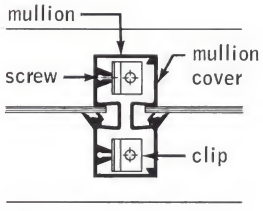

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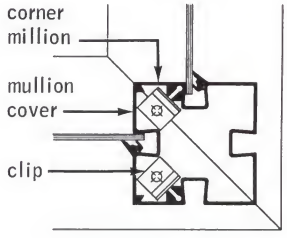

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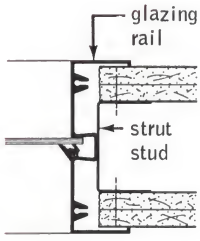

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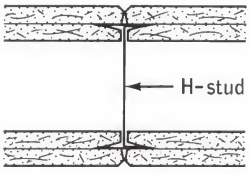

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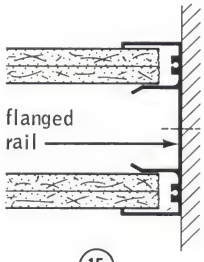

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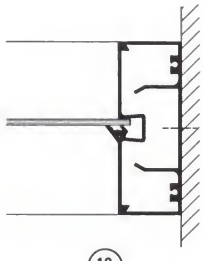

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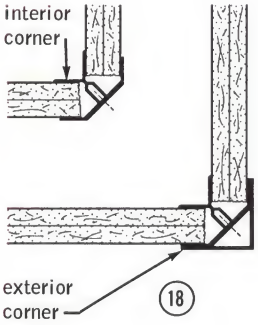

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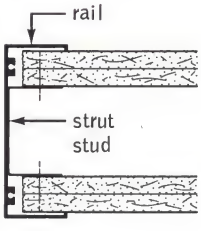
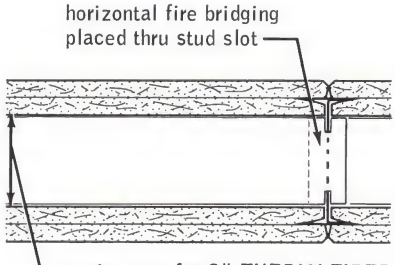
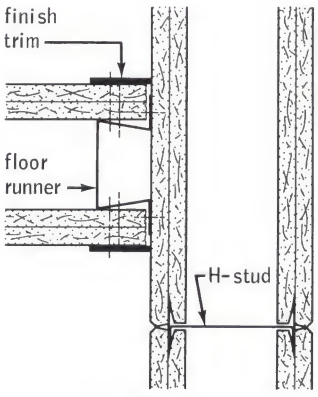


partition terminal



optional inclusions



partition intersection

specifications

notes to architect

1. *Door frames should be formed with the E-Z WALL extruded aluminum door assembly.*

2. *In certain areas where seismic design code requirements govern, consult local building codes for partition limitations.*

3. *Where this partition is used as a sound barrier, the use of caulking to seal all cut-outs, such as at electrical fixtures and to seal all intersections with the adjoining structure is recommended. Eliminate cutting holes back to back and adjacent to each other.*

4. *The addition of 2" x 24" x 48" THERMAFIBER Sound Attenuation Blankets to the stud cavity, pressed tightly in place, stapled to the back side of one face of partition, will increase the sound transmission loss of the partition.*

5. **Fixture Attachment**—*Lightweight fixtures and trim should be installed using plastic plugs or other expandable anchors for screw attachment. Medium and heavy weight fixtures should be supported from the primary framing.*

6. **Electrical Fixtures**—*The depth of electrical boxes should not exceed 2½". Standard conduit and boxes may be used.*

7. *See USG Paint Products Folder for complete Paint Specifications.*

The most expedient way to obtain additional information on fire ratings, sound transmission or details not covered in this publication is to direct inquires to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

scope

Furnish and erect E-Z WALL partitions as indicated on the plans and specified hereunder. Partitions are to be flush-panel-type, 3⅝" thick, (railing, cornice, and/or ceiling height) as supplied by the United States Gypsum Company.

shop drawings

Shop drawings showing layout and details of construction by partition contractors, when required, shall be submitted for approval.

materials

a. E-Z WALL Panels shall be formed from mill-laminated gypsum board panels (plain) (vinyl-faced—specify color) ¾" thick by 24" wide by appropriate height. The panels shall have accurately formed off-set edges for concealed attachment to steel H-studs.

b. Steel H-studs shall be one-piece open web type, roll-formed from 23-ga. electro-galvanized steel, isolated from floor and ceiling runners.

c. Floor runners shall be formed from 23-ga. electro-galvanized steel. Ceiling runners shall be one-piece extruded aluminum. Floor and ceiling runners shall have formed-in spacers to hold panels in alignment. (Ceiling runners shall have integral trim to conceal top edges of panels.)

d. Top set base trim shall be adhesively applied after panels have been erected and finished. Alternate: Rigid base trim shall be 18-ga. prime painted, 2½" high, with 7/16" projection. Base trim shall be snapped on over 18-ga. base trim clips, provided at maximum spacing of 24".

e. Door frames shall be formed of an extruded aluminum door buck and an extruded aluminum insert. Door bucks shall provide a finished opening into which an insert is fitted to provide door stops and hardware mortises. Wood doors, furnished by partition contractor, shall be 1¾" thick by appropriate width up to 3'0" by 7'0" high. Continuous removable plastic strikes shall be provided for quiet operation of doors and to lessen impact sound transmission.

f. Door hardware consisting of (three 4"x4" butts for 1¾" thick doors) and key-in-knob lock shall be furnished in US 28 finish by the door supplier.

g. Window frames shall be of sizes indicated on the plans and shall be built up from standard E-Z WALL extruded aluminum parts. Glass shall be furnished by the partition contractor and shall be set in E-Z WALL vinyl plastic glazing channels.

h. Exposed aluminum members shall be etched and anodized to provide a permanent finish of neutral gray color.

installation

Lay out the partition. Securely attach floor and ceiling runners. Accurately plumb strut studs at door openings and terminals.

Install E-Z WALL Panels, H-studs, and trim members in accordance with United States Gypsum Company installation methods. Panels erected to meet fire rating shall be stapled from the back with three rows of wire staples spaced 8" c. to c. in each row.

workmanship

The finished partition shall be rigid, plumb, with horizontal lines leveled; neat in appearance, and free from defects in workmanship. All connections to walls, floors, ceilings, cornice sections, and connections between gypsum board panels shall be concealed. If doors are hung by the partition contractor, hardware shall be adjusted to proper working order.

UNITED STATES GYPSUM

partitions **a**

IMPERIAL* Plaster and Wood Framing

THIN/COAT

1336

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
1 hr. est	Wd Stud—Resil ⅝" IMPERIAL plaster base & thin coat plaster—2x4 16" o.c.—3" THERMAFIBER ins wool blkts—RC-1 chan one side spaced 24" o.c.—base att with 1" Type S screws—opp side att direct with 1½" Type W screws—1/16" IMPERIAL plaster fin both sides—perimeter caulked wt 8 width 5½"	USG-111-FT-G&H (s)	50		142	Good sound isolation combined with highly abrasion-resistant surface	a-1336
1 hr.	Wd Stud—½" IMPERIAL plaster base Type X att direct & thin coat plaster—2x4 16" o.c.—base att 6d nails 7" o.c. 1/16" IMPERIAL plaster fin—joints taped wt 7 width 4¾"	U of C 8-27-64 (f)	N/A		113	Excellent surface hardness and abrasion resistance	a-1336
ceiling applications							
1 hr.	½" IMPERIAL gypsum pl base Type X & thin coat plaster ceiling—wd joist 2x10 16" o.c. fire stopped—1" nom wd sub & fin flr—pl base att 5d nails 6" o.c.—⅛" IMPERIAL plaster fin—joints taped clg wt 7.5	UL Des 42-1 hr (f)	N/A		clg matls 27		a-1336
1 hr.	Resil ½" IMPERIAL gypsum pl base Type X & thin coat plaster ceiling—wd joist 2x10 16" o.c.—1" nom sub & fin flr—RC-1 chan spaced 24" o.c. and at end joints—pl base att with Type S screws 12" o.c.—1/16" IMPERIAL plaster fin—joints taped clg wt 7	UL Des 41-1 hr (f)	N/A		clg matls 38		a-1336

description

In the IMPERIAL Plaster Systems a thin veneer (1/16" to 3/32" thick) of specially formulated, high-strength gypsum plaster is applied over IMPERIAL Plaster Base. Either IMPERIAL Plaster Finish is applied in a single-coat system, or IMPERIAL Plaster Basecoat is used in a two-coat application as a superior base for DIAMOND* Finish, STRUCTO-GAUGE* Gauging Plaster and lime, or Keene's-lime-sand-float finish.

IMPERIAL Plaster Base, 4' wide, has a high-strength, high-density core, either regular or Type X fire-rated, covered with special absorption face paper designed for thin-coat plastering.

Versatile IMPERIAL Plaster Base is directly attached to wood framing with screws or nails or resiliently attached using the RC-1 Resilient Channel to provide superior sound transmission loss. In the latter method IMPERIAL Plaster Base is fastened to the resilient channels with power-driven 1" USG® Type S Screws spaced 12" o.c. These specially designed self-tapping steel screws with a rust-inhibitive coating provide superior holding power and reduced core fracturing.

This system, with the lath and plaster resiliently attached over one side of wood studs, directly attached to the other and with THERMAFIBER* Insulating Blanket stapled in the stud cavity, provides one of the most economical party walls. IMPERIAL Plaster Base and Plaster may also be used with metal studs, metal furring channels or in laminated gypsum construction to meet incombustibility requirements for interior partitions, party walls, chase walls and furring (see separate IMPERIAL Plaster Systems Folder for details).

function and utility

IMPERIAL Plaster Systems are designed for interior partitions and ceilings wherever conventional plaster or drywall systems are used. Perfectly integrated components provide exceptionally hard surfaces ready for next-day decoration.

Durability—The high-strength (approx. 3,000 psi), abrasion- and crack-resistant features of IMPERIAL Plaster offer the durability needed in high traffic areas, and obtainable with few other materials.

Fire Resistance ratings of 1 hour are available using Type X plaster base in both walls and ceilings (see table above).

Sound Control—The systems offer sound isolation up to 50 STC with the use of resilient channels and insulating wool; suitable for party walls (see tables above and on page 2).

Versatility—Adaptable to most dimensions or modules in virtually all types of buildings, these systems meet all normal design and job conditions.

Light Weight—The completed systems weigh 7 to 8 psf; appreciably less than masonry partitions of the same thickness.

Economy—Simple, inexpensive components erect quickly at a lower cost than conventional plaster systems. Plaster is rapidly applied; both IMPERIAL basecoat and finish are available in choice of two formulas—Machine Application or Hand Tool Application.

limitations

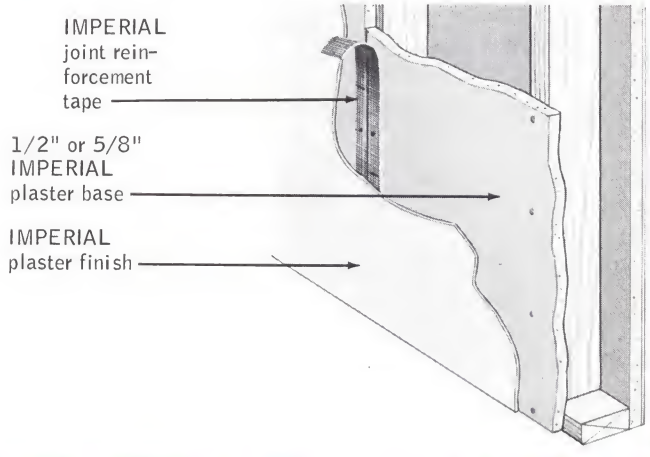
1. These constructions should not be used where exposed to abnormal moisture or excessively high humidity or temperature.

2. 1" USG Type S Screws must be used for attachment of single layer base to RC-1 Resilient Channels.

3. RC-1 Resilient Channels must be attached to framing only with 1¼" USG Type W Screws. Nails should not be used.

4. Resilient ceilings should not be installed beneath highly flexible floor joists. Install only to framing meeting "Wood Framing Requirements" (see Specifications).

5. Max. Framing Spacing: 24" o.c., except 16" for ceilings with ½" thick base applied parallel with joists.



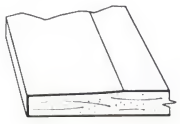
A.I.A. File No. 20/21-A/20-B-2.1

A.I.A. File No. 20/21-A/20-B-2.1

*Reg. U.S. Pat. Off.

components / data

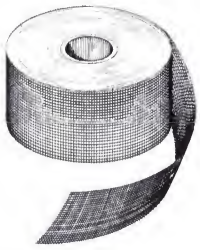
see "plaster bases" product catalog for full description on accessories & sizes



½", or ⅝"
IMPERIAL plaster base

1" USG screw—type S—bugle head

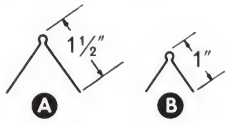
1¼" USG screw—type W—bugle head



IMPERIAL joint reinforcement tape

ring shank nail

barbed shank nail



800 series corner bead

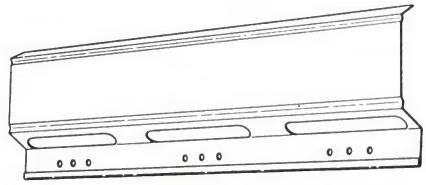
700 series metal trim

sound attenuation factors

test no.	method	decibel frequency in cps										STC
		125	175	250	350	500	700	1000	1400	2000	2800	4000	
USG-I11-FT-G&H	Lab	27	35	41	48	54	57	57	59	52	57	60	50

fastener spacing—IMPERIAL Plaster Base

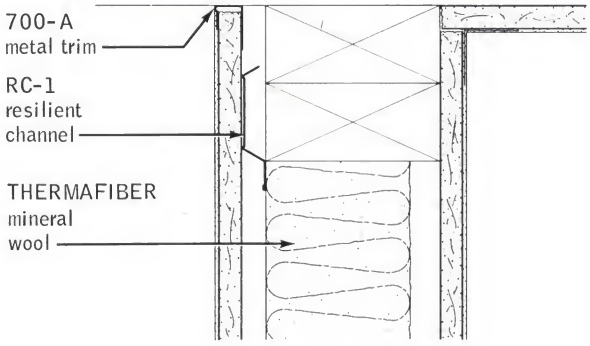
thickn. of base	framing	type fastener	max. fastener spacing
½"	wood	**Nails** (for regular base)—1¼", 13 ga., 15/64" head, ring or barbed shank, blued, polished or cement coated	7" ceilings 8" walls
		Nails (for Type X base)—1⅝" 5d cooler type cement coated	6" ceilings 7" walls
		Screws—USG 1¼" Type W	12"
with RC-1 channel		**Screws**—USG 1" Type S	12"
⅝"	wood	**Nails** (for regular base)—1⅝", 13 ga., 15/64" head, ring or barbed shank, blued, polished or cement coated	7" ceilings 8" walls
		Nails (for Type X base)—1⅞" 6d cooler type cement coated	6" ceilings 7" walls
		Screws—USG 1¼" Type W	12"
with RC-1 channel		**Screws**—USG 1" Type S	12"



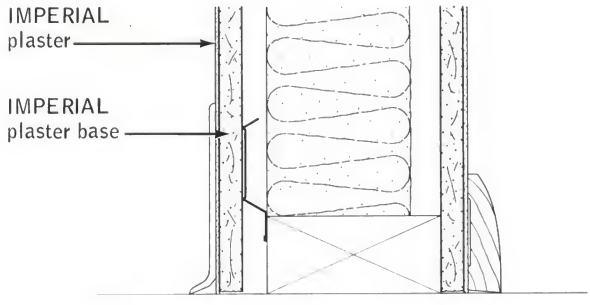
USG RC-1 resilient channel

details

ceiling attachment

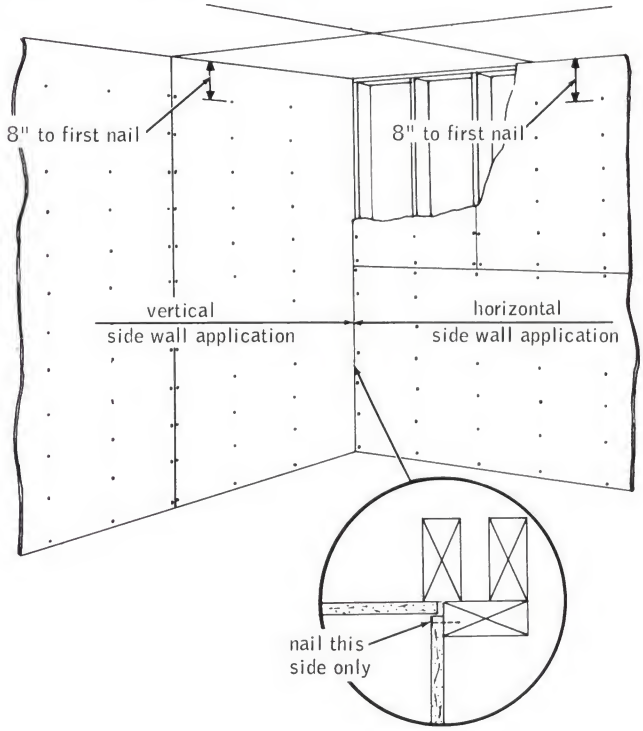


floor attachment & base



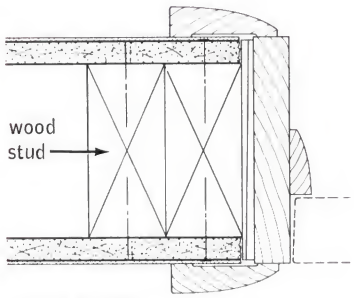
top set wood

floating interior angle system

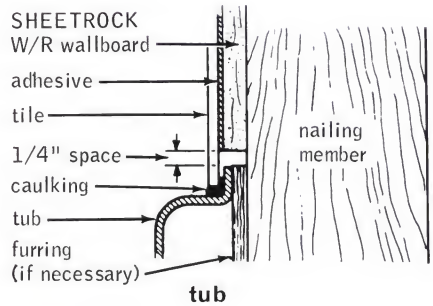


details/specifications

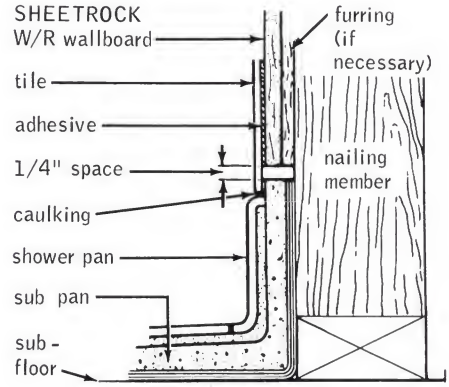
miscellaneous



door jamb



tub



shower pad

SHEETROCK W/R wallboard installation – tub and shower areas

specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *Lath and plaster surfaces (non-load bearing) will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that lath and plaster surfaces be isolated from all structural elements by control joints or other means where:*

a. *a partition abuts a structural element or dissimilar wall or ceiling assembly.*

b. *the partition construction changes within the plane of the partition.*

In long partition runs, control joints should be provided no more than 30′ o.c. Door frames extending from floor to ceiling are recommended as control joints. For doors less than ceiling height, control joints extending from both corners of the frame to the ceiling may be used.

Expansive ceiling areas should have control joints, spaced not to exceed 50′ in either direction. The continuity of both lath and plaster should be broken under control joints. Control joints may be positioned to intersect light fixtures, heating vents, air diffusers, etc., which are usually considered weak spots.

3. *Holes cut in a thin diaphragm of lath and plaster, such as door frames, borrowed lights, etc., cause a concentration of stresses in the plaster diaphragm. The use of additional reinforcement is recommended at the weakened area to distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

4. *Where contact or furred ceilings occur under roof construction, the plenum or attic space should be vented according to recommended engineering practice.*

5. *To retain maximum sound isolation, the integrity of the construction should not be voided by openings so as to create sound leaks.*

6. Wood Framing Requirements—*Wood framing meeting the following minimum requirements is necessary for proper performance.*

a. *Framework shall meet the minimum requirements of FHA and local building codes.*

b. *Framing members shall be straight, true, of uniform dimension, and framing shall be properly aligned.*

c. *All framing lumber shall be of a good grade for the intended use, and 2"x4" nominal size or larger shall bear the grade mark of a recognized inspection agency using grading rules for lumber recommended to American Lumber Standards Committee.*

d. *All framing lumber shall have a moisture content not in excess of 15% at the time of gypsum base application. Use of kiln dried lumber for joists is recommended.*

e. *Extremely hard (dense) or soft framing members should not be used for attachment of base.*

7. Ceramic Tile—*IMPERIAL Plaster Base is not recommended as a base for the adhesive application of ceramic, metal and plastic tile unless the edges are protected from wetting and the entire surface is sealed with adhesive or other material recommended by the tile manufacturer. SHEETROCK* W/R Gypsum Wallboard is recommended for this use (see details).*

8. *Proper sealing of IMPERIAL Plaster surfaces before painting is essential (see USG Paint Products Folder).*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

general conditions

In cold weather, the building shall be maintained above 55°F. for an adequate period prior to, during, and after installation of systems including the application of IMPERIAL Plaster. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

*Reg. U.S. Pat. Off.

specifications *(continued)*

materials

See USG product folders in this series:

Gypsum Plaster Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company.

a. IMPERIAL Plaster Base—(½″) (⅝″) thick, 48″ wide, (Regular) (Insulating) (Type X), lengths as required.

b. IMPERIAL Plaster—(Finish) (Basecoat) (Machine Application) (Hand Tool Application) used in accordance with manufacturer's directions.

c. RC-1 SHEETROCK Resilient Channel.

d. THERMAFIBER Insulating Wool Blankets (thickness) (choose from USG Insulating Wool Products Folder).

e. Fasteners—(choose from page 2).

f. IMPERIAL Tape—for joint reinforcement.

g. Accessories—(800-A) (800-B) Corner Bead, (700-A) (700-B) Metal Trim.

direct attachment of plaster base

The IMPERIAL Plaster Base shall be applied (vertically) (horizontally). All ends and edges of the base shall occur over framing members, except when joints are at right angles to framing members as in horizontal application.

The Plaster Base shall be applied first to the ceilings and then to the walls. To minimize end joints, use maximum practical lengths. The base shall be brought into contact, but shall not be forced into place. Where ends or edges abut they shall be fitted neatly.

End joints shall be staggered. Joints on opposite sides of partitions shall be so arranged as to occur on different studs. Interior vertical and horizontal angles shall be floated by not fastening to the framing members in the angles. In the case of framing members at right angles to the interior angle, fasten approximately 8″ away from the angle.

Fastening should proceed from the central portion of the base toward the ends and edges. While the fasteners are being driven, the base shall be held in firm contact with the underlying support. Nails shall be spaced 7 to 8″ o.c., screws 12″ o.c. and not less than ⅜″ from edges and ends of the base. The head of the fasteners shall be set flush with the surface of the paper but not breaking the paper. Where base appears too loose from the stud or joist, a second fastener within 1½″ of the first, shall be used.

Base shall be neatly cut and fitted for pipes, electrical outlets, medicine cabinets, etc. Holes for electrical outlet boxes shall be cut from the base by a special outlet box cutting tool. For circular holes the adjustable circular cutting tool shall be used. Remove any loose face paper at cut and use a quick setting plaster to fill any holes or openings.

resilient attachment of plaster base

RC-1 SHEETROCK Resilient Channels shall be positioned at right angles to the wood framing, spaced (16″) (24″) o.c. and attached to the supports with 1¼″ USG Type W Screws driven through the pre-punched holes provided in the attachment flange. On walls resilient channels shall be positioned with the plaster base attachment flange up and shall be located (16″) (24″) up from the floor line, a maximum of 6″ down from the ceiling line, and extended into all corners and connected to the corner framing. Channels shall not be cantilevered more than 6″. Channels shall be spliced directly over a framing member by spacing channels ⅛″ apart and screwing both end attachment flanges to framing. Splices shall be staggered and not be made directly under plaster base edge joints.

IMPERIAL Plaster Base shall be applied first to the ceiling and then to the partitions. Plaster base of maximum practical length shall be applied with the long dimension at right angles to the channels and with end joints centered over the channel, staggered and neatly fitted. Plaster base shall be fastened to channels with USG 1″ Type S screws spaced 12″ o.c. in the field of the base and along abutting ends. Screws shall be driven at least ⅜″ from ends or edges of base. Base shall be properly supported around all cut-outs and openings.

accessory application

a. IMPERIAL Tape shall be applied over all IMPERIAL Plaster Base joints with a spring-driven stapler using ⅜″ staples. Tape shall be applied over the full length of all joints but shall not overlap at intersections. Tape shall be affixed with two staples at the top of the tape—one on each side of the joint, 24″ o.c. along the length of the tape, alternating from side to side with two staples at the bottom.

At wall-ceiling intersections, the tape shall be stapled every 24″ along the ceiling edge only; for wall and partition interior corners, stapled every 24″ on one edge only, working from top to bottom. All interior corners shall have tape positioned to bridge the joint. For fire-rated assemblies, tape shall be stapled 8″ o.c.

b. Corner Bead—All vertical and horizontal exterior corners shall be reinforced with 800-A or B Corner Bead fastened with nails or staples 12″ o.c. on both flanges along the entire length of the bead.

c. Casing Bead—When an IMPERIAL wall or partition terminates against masonry or other dissimilar material, 700-A or B Metal Trim shall be applied over the IMPERIAL Plaster Base and fastened on the perforated side with nails or staples spaced 12″ o.c. The trim shall firmly abut the dissimilar material forming a neat joint.

d. Screws shall be power-driven with an electric screwdriver and set so that the screwhead provides a slight depression below the surface of the IMPERIAL Plaster Base without tearing through the face paper.

UNITED STATES GYPSUM

direct attachment

partitions

a

USG* Metal Lath and Wood Framing

1346

A.I.A. File No. 20-B-1.1

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
1 hr.	Wd Stud—Metal Lath & Plaster—2x4 16″ o.c.—3.4# dm met lath—¾″ 100:2-100:3 gypsum sand plaster wt 20 width 5⅜″	BMS-92 (f) NBS-228 F43 (s)	41		146		a-1346
1 hr.	Wd Stud—Metal Lath & Plaster—2x4 16″ o.c.—3.4# dm met lath—⅝″ 100:2-100:2 gypsum sand plaster wt 18 width 5⅛″	BMS-92 table 30 (f)	39 est		146		a-1346
ceiling application							
1 hr.	Wd Joist—Metal Lath & Plaster Ceiling—1″ nom wd sub & fin flr—3.4# dm met lath att with 1½″ nails 6″ o.c. —⅝″ 100:2-100:3 gypsum sand plaster clg wt 10	BMS-92 table 42 (f)		35 db est	clg matls 55		a-1346

description

In these fire-resistant assemblies USG Metal Lath is attached directly to wood studs or joists with nails or staples spaced 6″ o.c. The metal lath is applied across the supports with end joints staggered and occurring over supports. The sides and ends of adjacent sheets are lapped and secured together with 18 ga. tie wire. At interior angles the lath is carried around the corner to provide reinforcement. The assembly when completed with metal accessories and plaster provides an economical, versatile, crack-resistant construction for walls and ceilings.

Metal lath, expanded from rust-resisting sheet steel, is a versatile, lightweight base for the economical application of gypsum plasters. The excellent mechanical keying properties and equal distribution of reinforcing give assemblies using it high fire resistance (see table above).

Metal lath for this assembly is available in three types. USG Junior Diamond Mesh Lath is a general all-purpose lath, and recommended for ornamental, contour plastering. USG ⅛″ Z-Riblath, more rigid than Diamond Mesh Lath, is an excellent nail-on lath. USG ⅜″ Riblath is a self-furring type lath with exceptional rigidity that is suitable for support spacings up to 24″ o.c. (see table below).

function and utility

Versatile—These systems are easily adapted for use in all types of new construction and remodeling to provide fire protection for wood framing. They are suited for use in contoured or decoratively plastered walls and ceilings.

Fire Resistance—One-hour fire-resistance ratings have been established, acceptable for both walls and ceilings.

Crack Resistance—The metal lath reinforcing in the plaster resists cracking and failure due to structural movement of the frame.

Sound Control—The basic partition is acceptable as a divider within units. With ¾″ of gypsum sand plaster a 39 db sound rating (9 freq. average) has been established.

limitations

Maximum support spacing should not be exceeded (see table below).

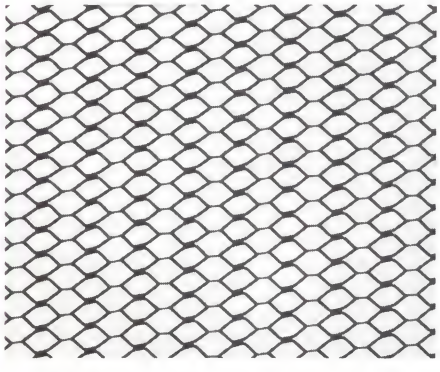
spacing of supports

type of lath	weight per sq. yd. (lbs.)	maximum allowable spacing wood studs	maximum allowable spacing wood joists
diamond mesh	2.5	16″	(1)
diamond mesh	3.4	16″	16″
⅛″ Z-riblath	2.75	16″	16″
⅛″ Z-riblath	3.4	19″	19″
⅜″ riblath	3.4	24″	24″
⅜″ riblath	4.0	24″	24″

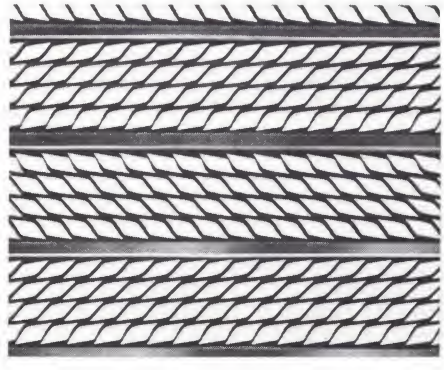
(1) not recommended

attachment spacing

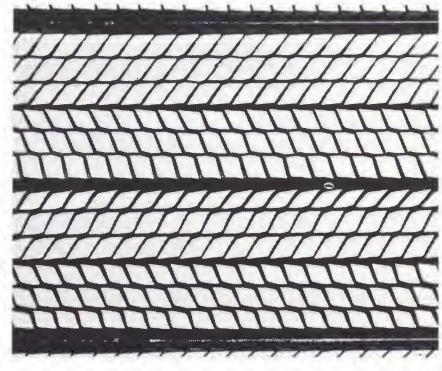
framing	attachment	fastener spacing c. to c.
wood studs	nails—4d common, driven to ¾″ penetration and bent over to engage 3 strands or through the rib.	6″
	nails—1″ roofing nail 7/16″ head, engaging 2 strands or through the rib.	6″
	staples—1″, 14 ga. wire staples, engaging 2 strands or a rib.	6″
wood joists	nails—1½″, 11 ga. barbed roofing nail, 7/16″ head, engaging 2 strands or a rib.	6″



USG junior diamond mesh lath



USG 4-mesh z-riblath



USG ⅜″ riblath

A.I.A. File No. 20-B-1.1

*Reg. U.S. Pat. Off.

components

see "plaster bases" product catalog for full description on accessories & sizes

USG
10-A
expanded
bull nose
corner bead

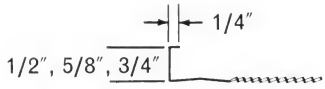
USG
5-A
bull nose
corner bead

USG
4-R
expanded
corner bead

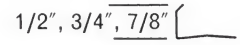
USG
1-A
expanded
corner bead

USG casing beads (expanded or short flange)

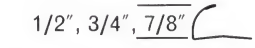
USG
8-A
picture
mould



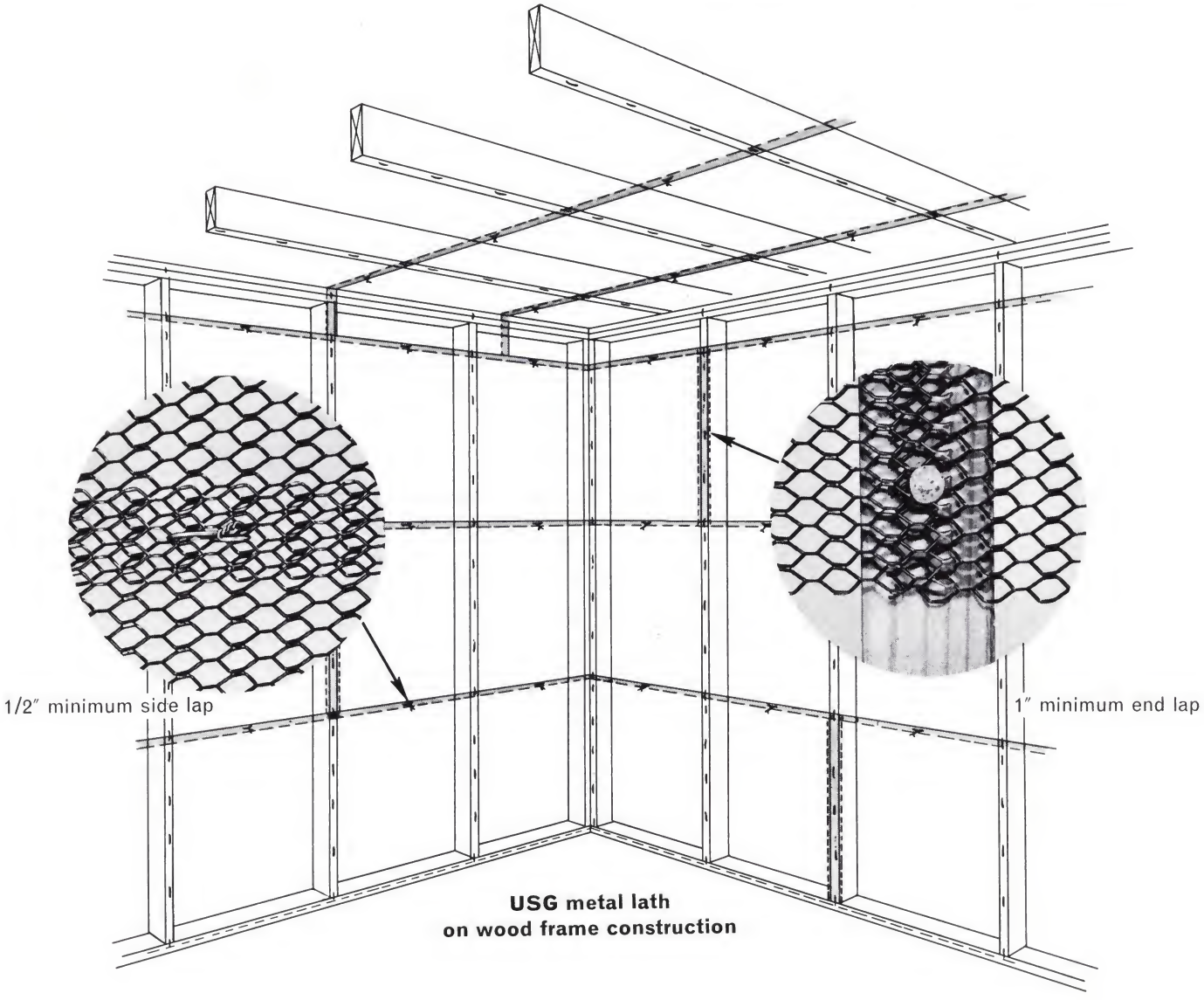
#66 squared edge



#60 semi-square



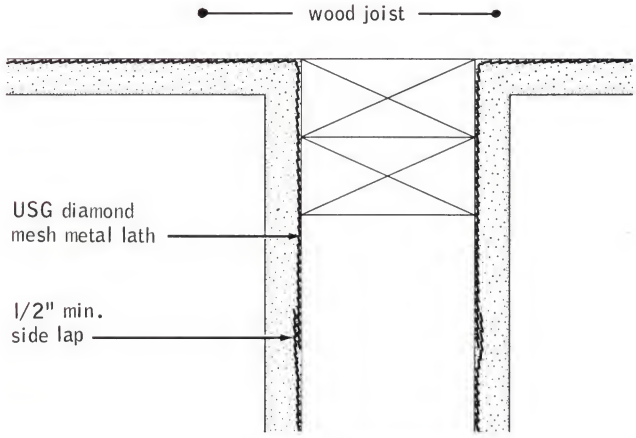
#4 or #138 quarter round



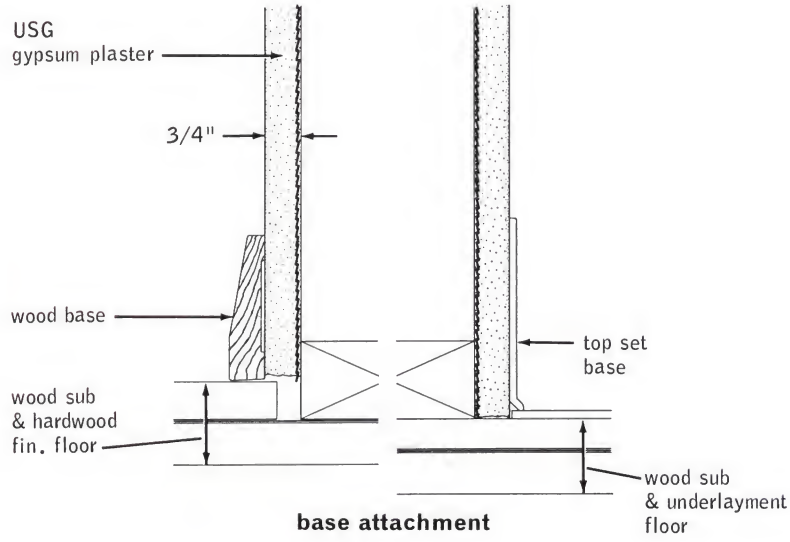
USG metal lath
on wood frame construction

details

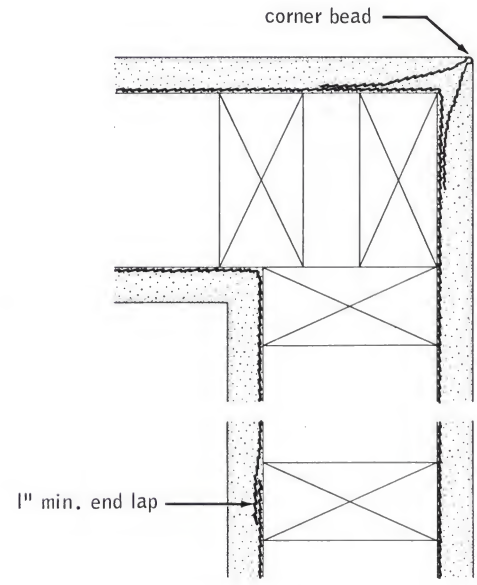
scale: 3″ = 1′-0″



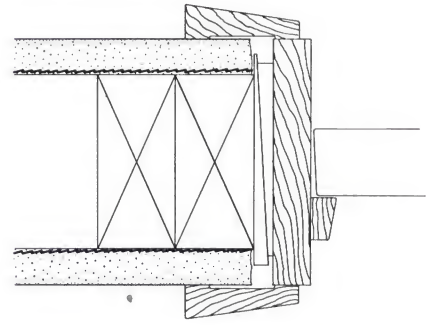
ceiling attachment



base attachment



partition corner



wood door frames

specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *Lath and plaster surfaces will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that lath and plaster surfaces be isolated from the following structural elements by control joints, or other means where:*

a. *a partition or ceiling abuts any structural elements, dissimilar wall or partition assembly, or other vertical penetration.*
b. *the construction changes within the plane of the partition or ceiling.*

In long partition runs, control joints should be provided no more than 30′ o.c. Door frames extending from floor to ceiling

may be used as control joints. For doors less than ceiling height, control joints extending from the center or both corners of the frame to the ceiling may be used.

Expansive ceiling areas should have control joints, spaced not to exceed 50′ in either direction. The continuity of both lath and plaster should be broken under control joints. Control joints may be positioned to intersect light fixtures, heating vents, air diffusers, etc., which are usually considered weak spots.

3. *Holes cut in a thin lath and plaster membrane such as door frames, borrowed lights, vents, grilles, access panels, light troffers, etc., cause a concentration of stresses in the plaster. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy and design, a control joint is not otherwise specified.*

4. *Where contact or furred ceilings occur under roof construction, the plenum or attic space should be vented according to recommended engineering practice.*

5. *To retain maximum sound isolation, the integrity of the partition or ceiling should not be voided by openings, such as doors, electrical outlets, medicine cabinets, vents, etc., so as to create sound leaks. Use sand aggregate only; do not use lightweight aggregates.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Illinois 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. Metal Lath shall be (2.5) (3.4) (Diamond Mesh) (2.75) (3.4) (⅛″ Z-Riblath) (3.4) (4.0) (⅜″ Riblath) 27″x96″.

b. USG Corner Bead (specify style from page 2).

c. USG Casing Bead (specify type from page 2).

d. USG 8-A Picture Mould.

e. 18 ga. Tie Wire.

f. Nails—(4d common) (1″ roofing nail, 7/16″ head) (1½″, 11 ga. barbed roofing nail, 7/16″ head) (not available from U.S.G.).

g. Staples—1″, 14 ga. Wire Staples (not available from U.S.G.).

plaster base attachment

Metal lath shall be applied with the long dimension of the sheet across the supports. Riblath shall be applied with the rib projections against the support.

The ends of all lath shall be lapped not less than 1″. If end laps are made between supports, they shall be adequately laced or tied with 18 ga. tie wire. The sides of diamond mesh lath shall be lapped not less than ½″. The sides of riblath shall be lapped by nesting outside ribs, and shall be wire-tied between supports not to exceed 9″ intervals. On walls metal lath shall be placed so that the lower sheets overlap the upper sheets. Wherever possible, ends of lath in adjacent courses shall be staggered.

At all interior angles, metal lath shall be formed into the corners and carried out onto the abutting surface.

Metal lath shall be secured to all supports at intervals not exceeding 6″ with nails or staples providing at least ¾″ penetration. Nails shall be driven through the rib or through the mesh engaging 2 strands. 4d common nails if driven through the mesh shall be bent over to engage 3 strands. Staples shall engage 2 strands or a rib.

lathing accessories

a. Metal Corner Bead No. (000000) shall be provided on all external plaster corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. Fasten securely with wire-ties, etc., spaced not over 8″ o.c.; stagger in two wings.

b. Casing Bead No. (000000) shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed. Wire-tie in place.

UNITED STATES GYPSUM

resilient attachment

partitions

a

USG* Metal Lath and Wood Framing

1356

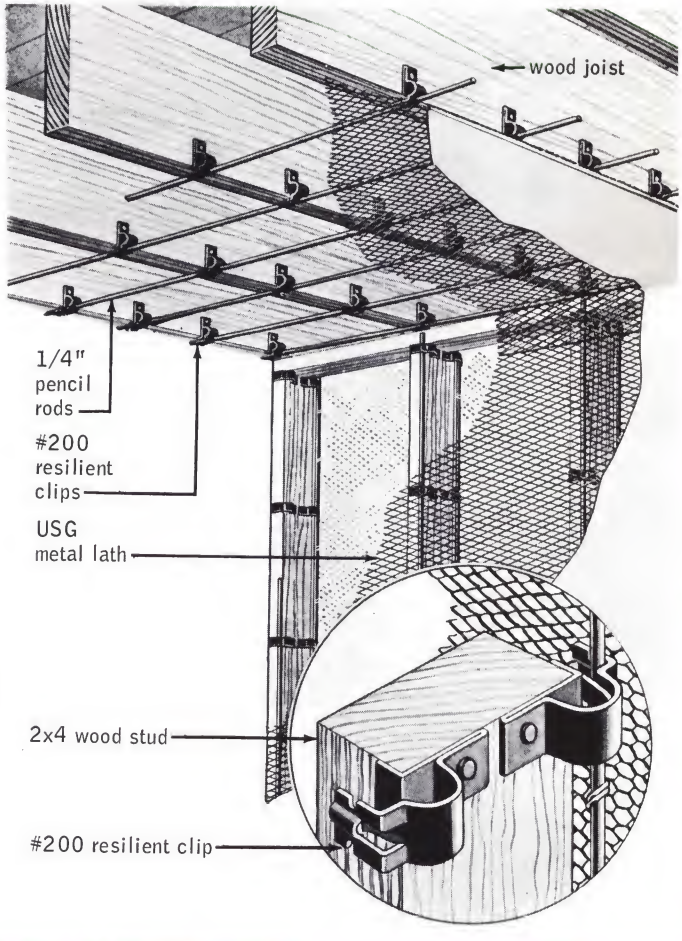
fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
1 hr. est	Wd Stud—Resil Metal Lath & Plaster—2x4's—3.4# dm met lath—¼" pencil rod—#200 resil clips—¾" gypsum sand plaster wt 21 width 5⅝"	TL-61-86 (s)	43		177	Excellent sound isolation for this type construction	a-1356
ceiling application							
1 hr. est	Wd Joist—Resil Metal Lath & Plaster Ceiling—1" nom wd sub & fin flr—3.4# dm met lath att to ¼" pencil rod on #200 resil clips—⅝" 100:2-100:3 gypsum sand plaster clg wt 10	NBS-710 (s)	52		clg matls 68	Excellent sound isolation & crack resistance	a-1356

description

These fire-resistant assemblies consist of USG Metal Lath and gypsum plaster attached to wood studs or joists to provide a resilient surface that appreciably improves sound control through walls and ceilings. In the construction USG Resilient Clips No. 200, spaced 16″ o.c. for walls and 12″ o.c. for ceilings, are nailed to the wood framing. ¼″ pencil rods are nested into the clips and metal lath is tied to the rods. By using these specially designed resilient clips, the two lath and plaster diaphragms are not rigidly coupled to the framing members. The isolation provided by the clips appreciably reduces the transmission of sound and structural movement to the outer surface of the plaster (see table above).

The assembly, when completed with metal accessories and plaster, provides fire protection to wood framing and outstanding sound and crack resistant features at only a nominal increase in cost over conventional lathing methods (see table above).

Metal lath, expanded from rust-resisting steel, is a versatile, lightweight base for the economical application of gypsum plasters. For these assemblies it is available in two types (see Specifications, page 3). The excellent mechanical keying properties and equal distribution of reinforcing provided by this plaster base gives the assembly its fire resistance.



function and utility

Versatile—Readily adapted to virtually all types of new construction and remodeling to provide fire protection, sound control and hard, abrasion-resistant, easily decorated plaster walls and ceilings. It satisfies most design and job conditions in commercial, industrial and residential applications where wood framing is used. Curved surfaces can be formed more satisfactorily than by any other method.

Fire Resistance—Estimated one-hour fire rating with wood framing members in walls and ceilings.

Sound Control—The Resilient Clips increase the sound-isolative efficiency of the construction to result in a partition with a 43 Sound Transmission Class.

Crack Resistance—The resilient attachment markedly reduces the possible transmission of stresses due to structural movement to the lath and plaster membrane, thereby reducing the incidence of cracking.

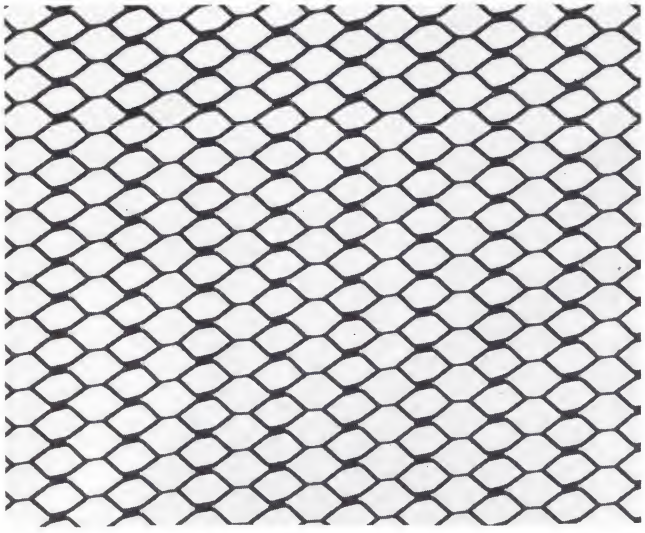
limitations

1. Maximum support spacing: 16″ for wood studs or joists.

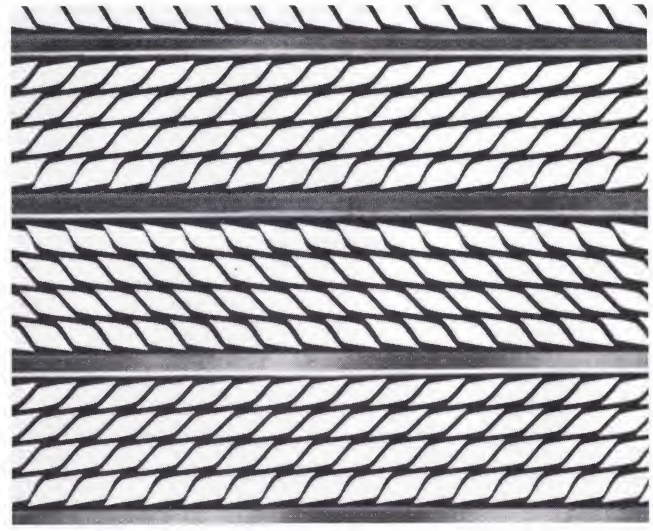
2. 2.5 lb. Diamond Mesh Metal Lath is not recommended for ceiling application.

A.I.A. File No. 20-B-1.1

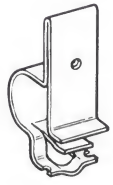
components



USG junior diamond mesh lath

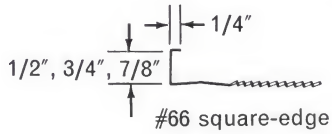


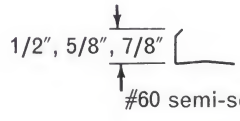
USG 4-mesh z-riblath



#200
resilient
clip

USG casing beads
(expanded or short flange)



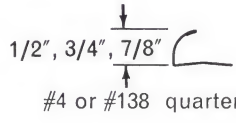


USG
1-A
expanded
corner bead

USG
10-A
expanded
bull nose
corner bead

see "plaster bases" product catalog for full description on accessories & sizes

USG
8-A
corner
bead

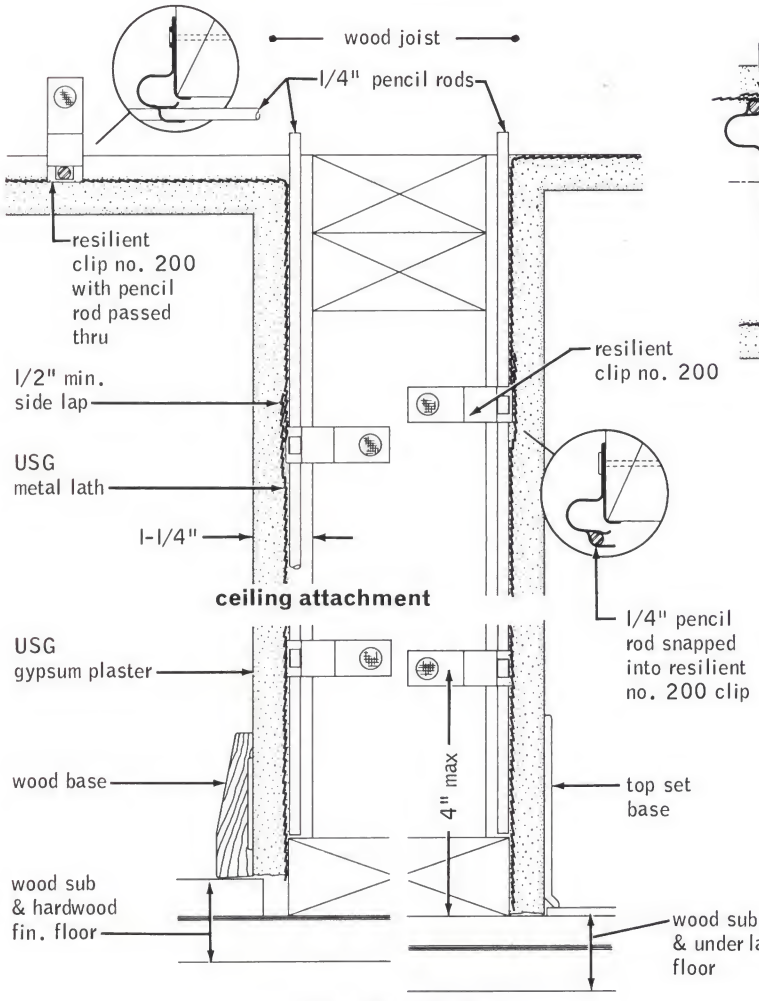


USG
5-A
bull nose
corner bead

USG
4-R
expanded
corner bead

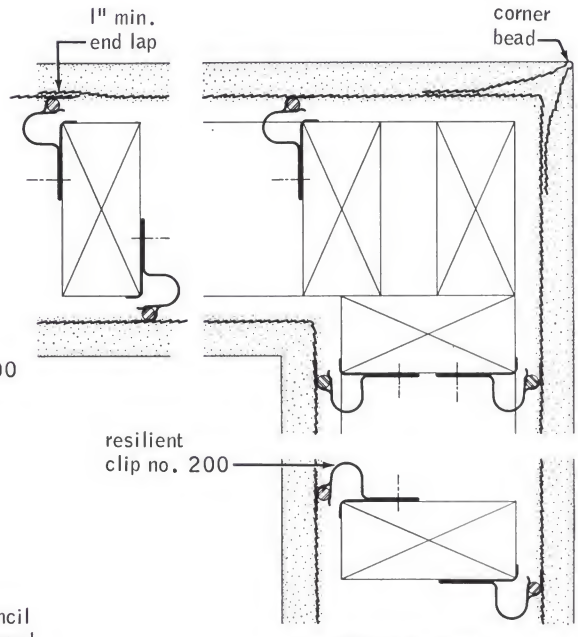
details

scale: 3″ = 1′-0″

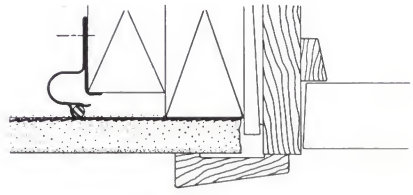


ceiling attachment

base attachment



partition corner



wood door frame

specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *Lath and plaster surfaces will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that lath and plaster surfaces be isolated from the following structural elements by control joints, or other means where:*

a. *a partition or ceiling abuts any structural elements, dissimilar wall or partition assembly, or other vertical penetration.*

b. *the construction changes within the plane of the partition or ceiling.*

In long partitions runs, control joints should be provided no more than 30′ o.c. Door frames extending from floor to ceiling

*Reg. U.S. Pat. Off.

may be used as control joints. For doors less than ceiling height, control joints extending from the center of both corners of the frame to the ceiling may be used. Expansive ceiling areas should have control joints, spaced not to exceed 50′ in either direction. The continuity of both lath and plaster should be broken under control joints. Control joints may be positioned to intersect light fixtures, heating vents, air diffusers, etc., which are usually considered weak spots.

3. *Holes cut in a thin lath and plaster membrane such as door frames, borrowed lights, vents, grilles, access panels, light troffers, etc., cause a concentration of stresses in the plaster. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy and design, a control joint is not otherwise specified.*

4. *Where contact or furred ceilings occur under roof construction, the plenum or attic space should be vented according to recommended engineering practice.*

5. *To retain maximum sound isolation, the integrity of the partition or ceiling should not be voided by openings, such as doors, electrical outlets, medicine cabinets, vents, etc., so as to create sound leaks. Use sand aggregate only; do not use lightweight aggregates.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill. 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. Metal Lath shall be (2.5) (3.4) (Diamond Mesh) (2.75 ⅛″ Z-Riblath) 27″ x 96″.

b. USG Resilient Clip No. 200.

c. USG Corner Bead (specify style from page 2).

d. USG Casing Bead (specify type from page 2).

e. USG 8-A Picture Mould.

f. ¼″ Pencil Rod.

g. 18 ga. Tie Wire.

h. Nails—13 ga., 1⅛″ Lathing Nails (not available fron U.S.G.).

plaster base attachment

USG Resilient Clips No. 200 shall be nailed to wood framing spaced not to exceed 16″ o.c. on walls and 12″ o.c. on ceilings. Clips shall provide ½″ furring for metal lath from supports. Clips shall be located not more than 4″ from floor, wall-to-wall and wall-to-ceiling intersections, and abutting dissimilar construction and as required above and below openings. On walls ¼″ pencil rods of ceiling height length shall be erected vertically spaced no more than 16″ o.c. by engaging the clip projection. On ceilings ¼″ pencil rods spaced no more than 12″ o.c. shall be erected across the supports by threading through the clip holes.

Metal lath shall be applied with the long dimension of the sheet across the supports. Riblath shall be applied with the rib projections against the support.

The ends of all lath shall be lapped not less than 1″. If end laps are made between supports, they shall be adequately laced or tied with 18 ga. tie wire. The sides of diamond mesh lath shall be lapped not less than ½″. The sides of diamond mesh lath shall be lapped not less than ½″. The sides of riblath shall be lapped by nesting outside ribs, and shall be wire-tied to every support, and between supports not to exceed 9″ intervals. On walls metal lath shall be placed so that the lower sheets overlap the upper sheets. Wherever possible, ends of lath in adjacent courses shall be staggered.

At all interior angles, metal lath shall be formed into the corners and carried out onto the abutting surface, and adequately secured.

Metal lath shall be secured to all supports with 18 ga. tie wire at intervals not exceeding 6″. Ends of all ties shall have three full twists, then shall be bent up into the plane of the lath.

lathing accessories

a. Metal Corner Bead No. (000000) shall be provided on all external plaster corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. Fasten securely with wire-ties, etc., spaced not over 8″ o.c.; stagger in two wings.

b. Casing Bead No. (000000) shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed. Wire-tie in place.

UNITED STATES GYPSUM

direct attachment

partitions **a**

ROCKLATH* and Wood Framing

PLASTER BASE

1366

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
2 hrs.	Wd Stud—Gypsum Lath & Plaster—2x4 16″ o.c.—⅜″ perf ROCKLATH nailed 5″ o.c.—hex wire mesh nailed 8″ o.c. over face of lath & held 5/16″ away from face—1″ 100:2½ gypsum perlite plaster wt 12 width 6⅜″	T-961-OSU (f)	N/A		195		a-1366
1 hr. est	Stag Wd Stud—Gypsum Lath & Plaster—stag 2x4 16″ o.c. —com top & bottom plates—2″ THERMAFIBER ins wool batts—⅜″ plain ROCKLATH nailed—½″ gypsum sand plaster wt 18 width 7⅜″	TL-58-64 (s)	50		182	Excellent party wall—note comparison with test TL-61-232	a-1366
1 hr. est	Stag Wd Stud—Gypsum Lath & Plaster—stag 2x3 16″ o.c. —⅜″ plain ROCKLATH nailed—100:2½ gypsum sand plaster wt 14 width 4¾″ min	TL-61-232 (s)	42		173		a-1366
1 hr.	Wd. Stud—Gypsum Lath & Plaster—2x4 16″ o.c.—⅜″ perf ROCKLATH nailed 3″ o.c.—3/16″ 100:2 gypsum perlite plaster wt 9 width 5½″	UL Des 7-1 hr (f) NBS-252 (f)	N/A		128	Extra nailing and lightweight aggregate with extra thickness	a-1366
1 hr.	Wd Stud—Gypsum Lath & Plaster—2x4 16″ o.c.—⅜″ perf ROCKLATH nailed 4″ o.c.—½″ 100:2 gypsum sand plaster wt 15 width 5⅜″	T-948 OSU (f) TL-58-60 (s)	41		128	Same as NBS-148 except perf. lath	a-1366
1 hr.	Wd Stud—Gypsum Lath & Plaster—2x4 16″ o.c.—⅜″ plain ROCKLATH—1⅛″ nails 4″ o.c.—½″ 100:2 gypsum sand plaster wt 15 width 5⅜″	T-1380 OSU (f) NBS-148 (s)	40		128	Standard wood stud partition	a-1366
ceiling applications							
1 hr.	Gypsum Lath & Plaster Ceiling—wd joist—1″ nom wd sub & fin flr—⅜″ perf ROCKLATH—3″ Striplath on joints—½″ 100:2 gypsum sand plaster clg wt 6	BMS-92 table 42 (f) NBS-714 (s)	37		clg matls 51	Good method to attain 1-hr. rating—note Striplath use	a-1366
1 hr.	Gypsum Lath & Plaster Ceiling—wd joist—1″ nom wd sub & fin flr—⅜″ ROCKLATH FIRECODE—3″ Striplath along joist—½″ 100:2 gypsum sand plaster clg wt 6	FPRI No. 6 (f)	37 est		clg matls 40	Best method to attain 1-hr. rating—standard frame const	a-1366
1 hr.	Gypsum Lath & Plaster Ceiling—wd joist—1″ nom wd sub & fin flr—⅜″ ROCKLATH FIRECODE—⅝″ 100:2 gypsum perlite or STRUCTO-LITE plaster clg wt 5	T-2134-1 OSU (f)	N/A		clg matls 40	Constr. same as FPRI No. 6 except for Striplath & plast.	a-1366
1 hr.	Gypsum Lath & Plaster Ceiling—wd joist—1″ nom wd sub & fin flr—⅜″ perf ROCKLATH—½″ 100:2½ gypsum perlite plaster clg wt 7	GA-NBS-258 (f)	N/A		clg matls 39	Standard frame construction	a-1366
wall furring application							
—	Wood furring strips 16″ o.c., Insulating ROCKLATH plaster base, ½″ sanded basecoat plaster, lime putty coat	—	—	—	138	Does not isolate surface membrane from structural stresses	a-1366

description

In these fire-resistant assemblies ROCKLATH Plaster Base is attached directly to wood studs or joists with nails or staples spaced approximately 5″ o.c. The ROCKLATH is usually placed with end joints staggered and applied with the long dimension across the framing members by two different methods described below. The assemblies when completed with metal accessories and plaster provide an economical, adaptable, crack-resistant construction for walls and ceilings—also abrasion-resistant and easily decorated.

In the BRIDJOINT* Lathing System for both walls and ceilings, the ROCKLATH is placed so the end joints occur between supports. Specially designed BRIDJOINT B-1 Field Clips are used to hold the ends of the lath together and in alignment. At interior corners the ROCKLATH is partially nailed to each framing member and is held rigidly in place with BRIDJOINT B-2 Corner Clips. This design produces "floating angles" that increase resistance to cracking at these vulnerable junctions. This system assures additional strength because the ends of the lath do not butt on framing members which are subject to movement; provides economies that more than offset the cost of the clips.

In the nail-on method of application, the ROCKLATH is placed so the end joints occur over supports. The end joints must be fastened to the supports and Cornerite reinforcing used in the interior angles. By partially nailing the ROCKLATH and securing the Cornerite only to the ROCKLATH (not the framing), "floating angle" construction may also be employed with this system. Additional waste for cutting Cornerite reinforcing and 33% more nailing are required with the nail-on method than with the BRIDJOINT system.

ROCKLATH Plaster Base and plaster applied to staggered wood studs with THERMAFIBER* Insulating Wool Blankets inserted in the wall cavity provide a partition with very good sound control that is suitable for use as a party wall (see table above). Insulating ROCKLATH and plaster over wood furring strips spaced 16″ o.c. offer an economical insulative exterior wall furring assembly with an effective vapor barrier.

ROCKLATH, a gypsum core faced on both sides with special paper, forms a rigid base for the economical application of gypsum plasters. For these assemblies, ROCKLATH is available in two thicknesses, four types (Plain, FIRECODE, Perforated and Insulating) and three sizes (see Specifications, page 2).

(*continued on page 2*)

A.I.A. File No. 20-B-2.1

A.I.A. File No. 20-B-2.1

*Reg. U.S. Pat. Off.

description (*continued from page 1*)

In perforated ROCKLATH, ¾″ round holes are punched through the lath 4″ o.c. in each direction to provide a mechanical key in addition to the natural plaster bond. Insulating ROCKLATH with bright aluminum foil laminated to the back side provides an effective vapor barrier at no additional labor cost.

function and utility

Versatility—ROCKLATH and plaster assemblies are readily adapted to virtually every type of new construction and remodeling. They satisfy most design and job conditions in commercial, industrial and residential applications where fire protection is required for wood framing. They can be used for interior partitions and ceilings, party walls, and exterior furring.

Fire Resistance—One- and two-hour fire ratings have been established. The systems provide acceptable fire protection for wood framing members on walls and ceilings.

Sound Control—The basic partition has a 41 Sound Transmission Class (STC). With staggered wood studs and THERMAFIBER Blankets, a 50 STC has been obtained.

Crack Resistance—Superior strength and resistance to cracking is offered by the BRIDJOINT system of lathing.

Economy—The flexibility of design, the high utilization of materials, the savings in nailing and reinforcement, all combine to make BRIDJOINT lathing an economical system.

sound attenuation factors

test no.	method	decibel frequency in cps											STC
		125	175	250	350	500	700	1000	1400	2000	2800	4000	
TL-58-64	Lab	40	40	41.5	44	48	53	53.5	—	47	—	57	50
TL-61-232	Lab	33	37	44	45	45	45	58	43	42	48	54	42
NBS-148	Lab	33	28	31	35	39	44	46	—	49	—	66	40
NBS-714	Lab	33	32	26	32	33	39	41	45	48	56	62	37

limitations

Maximum support spacing: 16″ o.c. for ⅜″ ROCKLATH; 24″ o.c. for ½″ ROCKLATH.

specifications

notes to architect

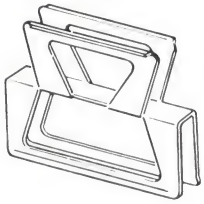
1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55° F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *Lath and plaster surfaces will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that lath and plaster surfaces be isolated from the following structural elements by control joints, "floating angles," or other means where:*

a. *a partition or ceiling abuts any structural elements, dissimilar wall or partition assembly, or other vertical penetration.*

(*continued on page 4*)

components



BRIDJOINT B-1
field clip

BRIDJOINT B-2
corner clip

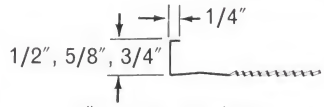
USG
selv-edge
cornerite

USG
1-A
expanded
corner bead

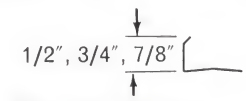
USG
4-R
expanded
flange
corner bead

USG
10-A
expanded
bull nose
corner bead

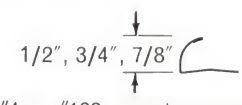
USG casing beads (expanded or short flange)



#66 square edge

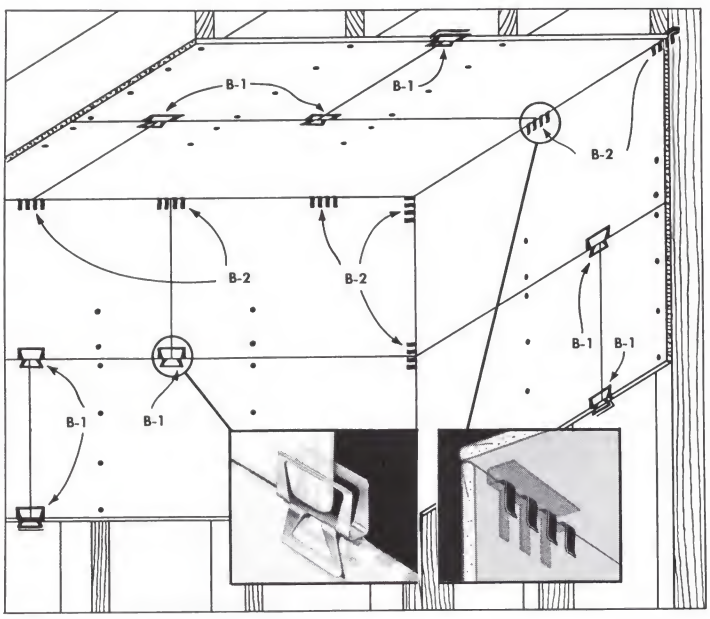


#60 semi-square

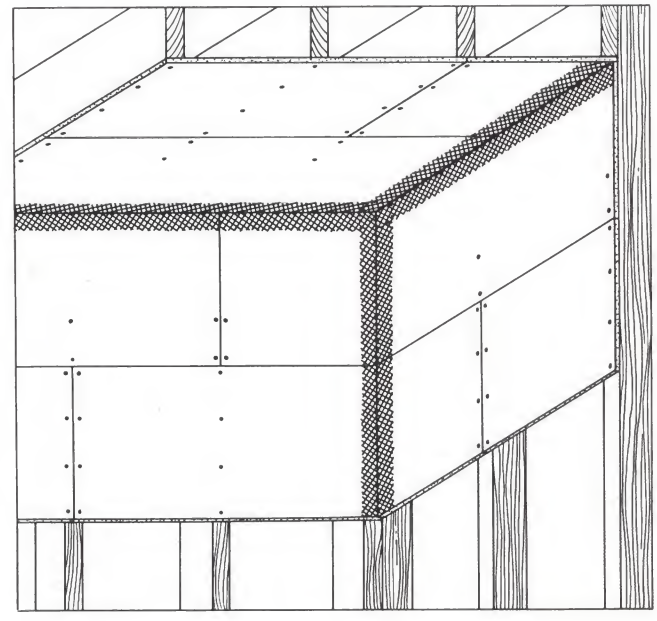


#4 or #138 quarter round

see Plaster Bases product catalog for full description on accessories & sizes



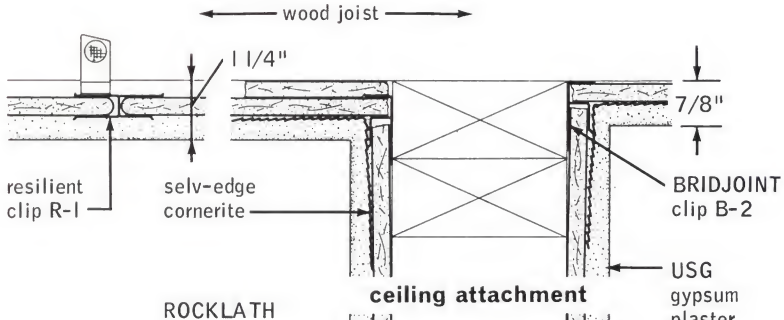
wood frame BRIDJOINT clip attachment



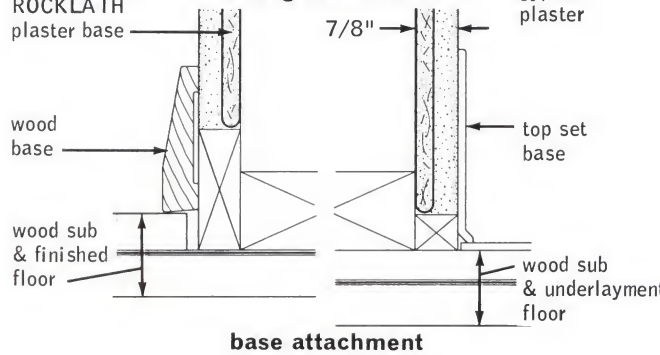
wood frame nail-on attachment

details

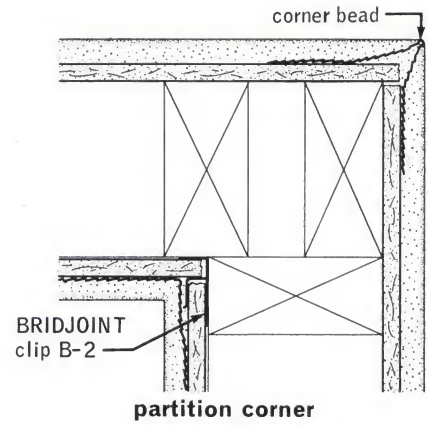
scale: 3″ = 1′-0″



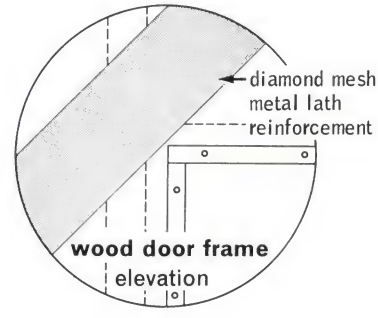
ceiling attachment



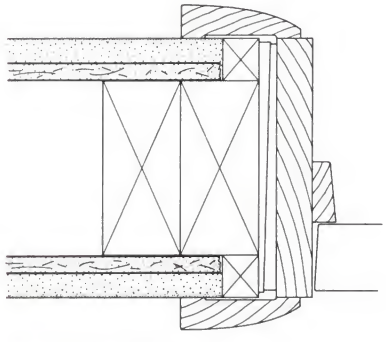
base attachment



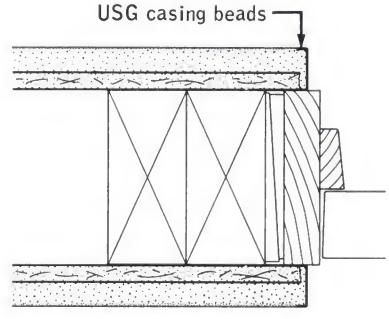
partition corner



wood door frame elevation

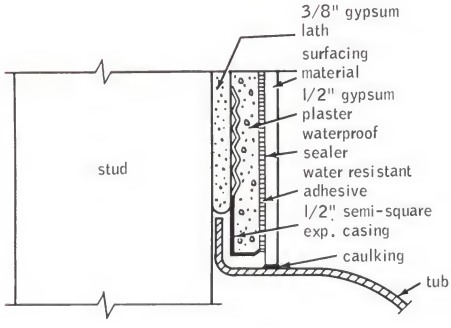


wood door frame

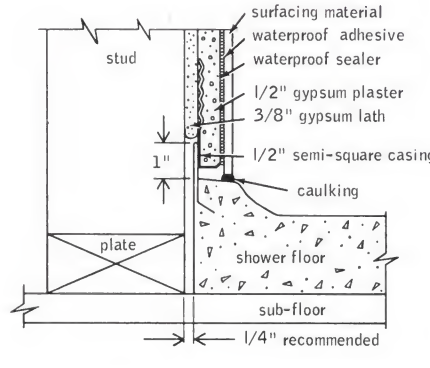


alt. wood door frame

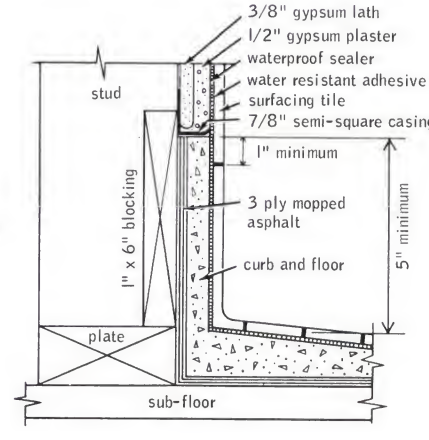
bath and shower details



steel tub



precast shower receptor



hot mopped sub-pan

*Reg. U.S. Pat. Off.

specifications (*continued from page 2*)

b. *the construction changes within the plane of the partition or ceiling.*

In long partition runs, control joints should be provided no more than 30′ o.c. Door frames extending from floor to ceiling may be used as control joints. For doors less than ceiling height, control joints extending from the center or both corners of the frame to the ceiling may be used.
Expansive ceiling areas should have control joints, spaced not to exceed 50′ in either direction. The continuity of both lath and plaster should be broken under control joints. Control joints may be positioned to intersect light fixtures, heating vents, air diffusers, etc., which are usually considered weak spots.

3. *Holes cut in a thin lath and plaster membrane such as door frames, borrowed lights, vents, grilles, access panels, light troffers, etc., cause a concentration of stresses in the plaster. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy and design, a control joint is not otherwise specified.*

4. *Where contact or furred ceilings occur under roof construction, the plenum or attic space should be vented according to recommended engineering practice.*

5. *To retain maximum sound isolation, the integrity of the partition or ceiling should not be voided by openings, such as doors, electrical outlets, medicine cabinets, vents etc., so as to create sound leaks. Use sand aggregate only; do not use lightweight aggregates. Caulk under runners, around openings, and partition perimeter.*

6. *Gypsum plaster can be satisfactorily used with radiant heating installations; see separate USG Systems Folder on* RED TOP* *Radiant Heat Plaster and Wood Framing for details.*

7. *Special precautions should be taken for proper application and use of ROCKLATH and gypsum plaster in bath and shower areas (see details, page 3).*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill. 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. ROCKLATH Plaster Base (⅜″) (½″) (Plain) (Perforated) (FIRECODE†) (Insulating) (16″x48″), (16″x96″), (24″ x specified lengths).

b. BRIDJOINT B-1 Field Clip.

c. BRIDJOINT B-2 Corner Clip.

d. USG® Selv-edge Cornerite (2″x2″) (3″x3″).

e. USG Casing Bead (specify type from page 2).

f. USG Corner Bead (specify type from page 2).

g. USG Self-Furring Junior Diamond Mesh Metal Lath.

h. Nails—13 ga. (1⅛″) (1¼″) long, 19/64″ flat head blued (not available from U.S.G.).

i. Staples—16 ga. galvanized flattened wire, flat crown 7/16″ wide, (⅞″) (1″) legs having divergent points (not available from U.S.G.).

plaster base attachment

ROCKLATH Plaster Base shall be applied face out with the long dimension across the framing members and with end joints, staggered in successive courses. Ends of lath shall fall between framing members and be aligned and engaged using the BRIDJOINT B-1 Field Clip. All joints shall be butted together and the lath shall be accurately cut and neatly fitted around all electrical outlets, openings, etc. Apply BRIDJOINT B-2 Corner Clip at all interior angles.

Fasteners shall be (nails) (staples). For ⅜″ ROCKLATH and maximum support spacing of 16″ o.c. use 4 fasteners, 5″ o.c., per 16″ width of lath; 5 per 24″ width of lath. For ½″ ROCKLATH and maximum support spacing of 24″ o.c. use 5 fasteners, 4″ o.c., per 16″ width of lath; 6 per 24″ width of lath. Fasteners shall be placed at least ⅜″ from edges and ends of lath. Staples shall be driven with the crown parallel to the framing member in such a manner that the crown bears tightly against the lath but does not cut the face paper.

All interior plaster angles shall be the floating type and shall have the first fastener spaced nominally 10″ from corner. Use specified fastening in the remainder of the wall and ceiling area.

lathing accessories

a. Metal Corner Bead No. (000000) shall be provided on all external plaster corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. Fasten securely with galvanized staples, etc., spaced not over 8″ o.c.; staggered in two wings.

b. Casing Bead No. (000000) shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed. Staple in place.

c. Reinforcing. Install a strip of self-furring diamond mesh lath over joints between dissimilar plaster bases. At all openings, reinforce the corners attaching a 12″x24″ piece of self-furring diamond mesh lath diagonally across the corners. Staple in place.

d. Cornerite (2″x2″)(3″x3″) shall be installed in all interior plaster angles. Staple to the lath only (required for nail-on method only).

†Available on Pacific Coast only.

UNITED STATES GYPSUM

resilient attachment

partitions **a**

ROCKLATH* and Wood Framing

PLASTER BASE

1376

A.I.A. File No. 20-B-2.1

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
1 hr.	Wd Stud—Resil Gypsum Lath & Plaster—2x4 16″ o.c.—⅜″ perf ROCKLATH—R-1 resil clips—½″ 100:2 gypsum sand plaster wt 15 width 6⅛″	T-1329-OSU (f)	N/A		160		a-1376
1 hr. est	Slot Wd Stud—Gypsum Lath & Plaster—2x4 slotted studs 16″ o.c.—3″ THERMAFIBER ins wool blkts—⅜″ plain ROCKLATH—½″ plaster wt 14 width 5⅜″	TL-62-348 (s)	44		145		a-1376
N/A	Wd Stud—Resil Gypsum Lath & Plaster—2x4 16″ o.c.—⅜″ plain ROCKLATH appl direct one side—opp side base layer of ½″ USG wd fiber sound dead bd appl direct & face layer of ⅜″ ROCKLATH appl with R-5 resil clips—½″ 100:2½ gypsum sand plaster both sides—perimeter caulked wt 14.5 width 6¼″	USG-119-FT-G&H (s)	54		160	Excellent sound attenuation	a-1376
N/A	Wd Stud—Resil Gypsum Lath & Plaster—2x4 16″ o.c.—⅜″ plain ROCKLATH—R-1 resil clips both sides—½″ 100:2½ gypsum sand plaster both sides—perimeter caulked wt 14.5 width 6⅛″	USG-121-FT-G&H (s)	54		138	Excellent sound attenuation at moderate cost	a-1376
N/A	Wd Stud—Resil Gypsum Lath & Plaster—2x4 16″ o.c.—3″ THERMAFIBER ins wool blkts—⅜″ plain ROCKLATH appl direct one side—opp side R-1 resil clips & ⅜″ ROCKLATH—½″ 100:2½ gypsum sand plaster both sides—perimeter caulked wt 14.5 width 5¾″	USG-118-FT-G&H (s)	56		159	Outstanding sound attenuation through use of clips and insulating wool	a-1376
ceiling application							
N/A	Resil Gypsum Lath & Plaster Ceiling—wd joist—1″ nom sub & fin flr—⅜″ ROCKLATH appl with R-1 resil clips—½″ gypsum sand plaster clg wt 6	NBS-709 (s)	52		clg matls 58	Good resistance to airborne sound, excellent crack resistance	a-1376

description

These fire-resistant assemblies consist of ROCKLATH Plaster Base and USG® gypsum plaster attached to wood studs or joists to provide a resilient surface that appreciably improves sound control through walls and ceilings. The ROCKLATH is attached (a) resiliently to the wood framing members with specially designed steel spring clips in the Resilient ROCKLATH System, or (b) directly to slotted 2x4 wood studs with the BRIDJOINT* Lathing System.

In the Resilient ROCKLATH System, the lath is placed so the end joints are staggered and occur over supports. R-1 Resilient Clips are nailed to one or both sides of the wood framing and spaced 16″ o.c. to engage and align the lath at the end joints. R-2 Resilient Corner Clips are applied at all interior angles to provide floating corner construction. R-5 Resilient Clips are used to apply ROCKLATH over a base layer of ½″ USG Wood Fiber Sound Deadening Board nailed to wood studs. These resilient clips isolate the lath and plaster from the framing and appreciably reduce the transmission of sound and structural movement to the outer surfaces of the plaster.

ROCKLATH applied to slotted 2x4 wood studs with the BRIDJOINT Lathing System provides a partition that offers sound control by separating the wall surfaces. In this construction 3″ THERMAFIBER* Insulating Wool Blankets are inserted in the wall cavity between the studs. A ⅛″ wide slot is cut in the center of the 4″ dimension of the stud before erection. The slot, cut through the stud and extending to within three inches of each end, does not appreciably impair the stud's load-bearing properties. The use of slotted studs is covered by U.S. Patent No. 2,922,201 owned by United States Gypsum Company. Contractors desiring to use this system should apply to U. S. G. for a license.

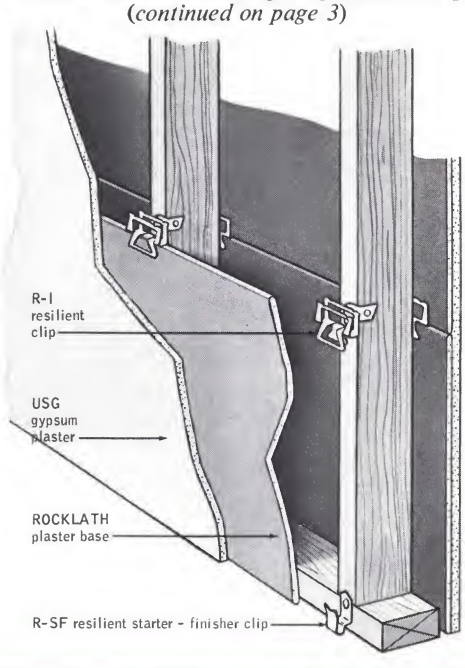
The BRIDJOINT System uses a combination of nailing and clipping with specially designed BRIDJOINT Clips to apply the ROCKLATH. For details on this application, see USG Folder on direct attachment ROCKLATH and wood framing.

ROCKLATH, a gypsum core faced on both sides with special paper, forms a rigid base for the economical application of gypsum plasters. For these assemblies, ROCKLATH is available in two thicknesses, three types (Plain, Perforated and Insulating) and three sizes (see Specifications, page 3). In perforated ROCKLATH, ¾″ round holes are punched through the lath 4″ o.c. in each direction to provide a mechanical key in addition to the natural plaster bond. Insulating ROCKLATH with bright aluminum foil laminated to the back side provides an effective vapor barrier at no additional labor cost.

function and utility

These systems satisfy most design and job conditions in new construction and remodeling to provide fire protection

(*continued on page 3*)



A.I.A. File No. 20-B-2.1

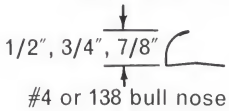
*Reg. U.S. Pat. Off.

components/details

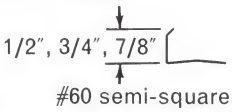
USG
1-A
expanded
corner bead

USG
10-A
expanded
bull nose
corner bead

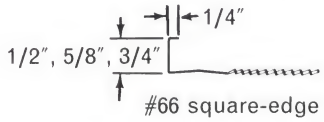
USG casing beads
(expanded or short flange)



#4 or 138 bull nose

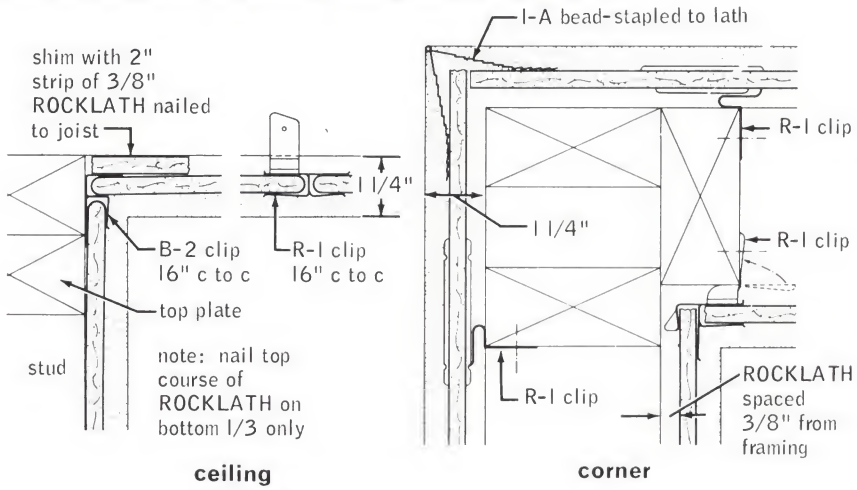


#60 semi-square



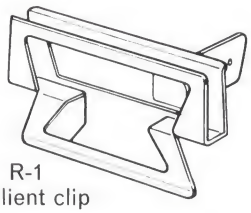
#66 square-edge

resilient ROCKLATH plaster base attachment system

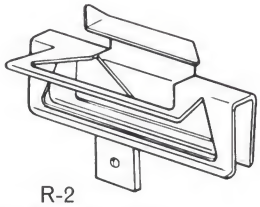


ceiling **corner**

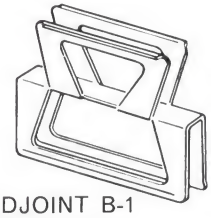
see "plaster bases" product catalog for full description on accessories & sizes



R-1
resilient clip

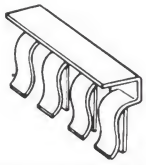


R-2
resilient corner clip

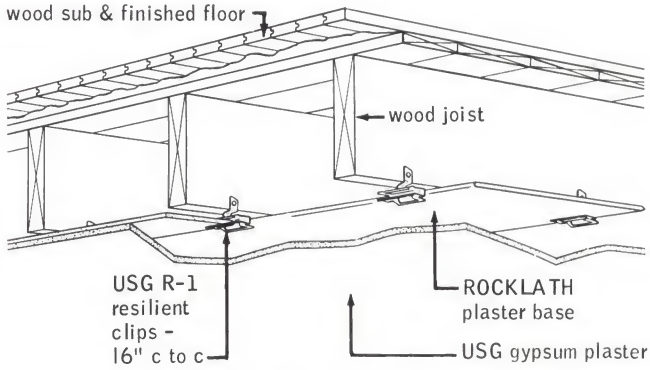


BRIDJOINT B-1
field clip

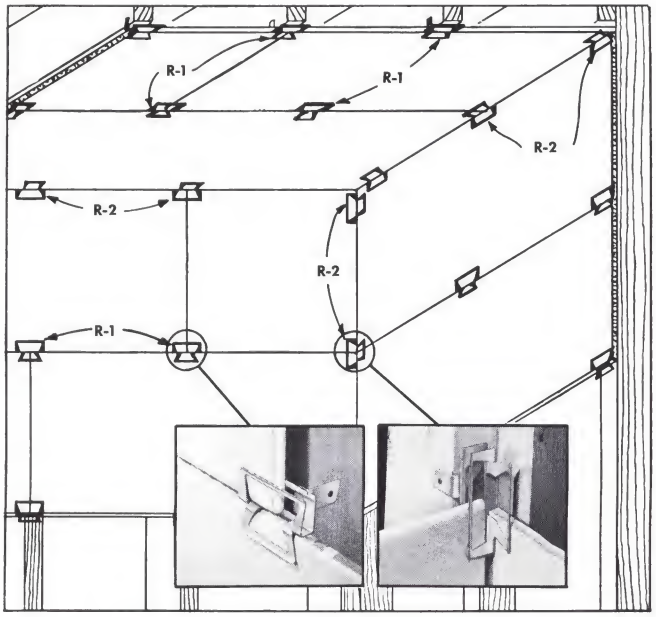
R-SF resilient
starter finisher



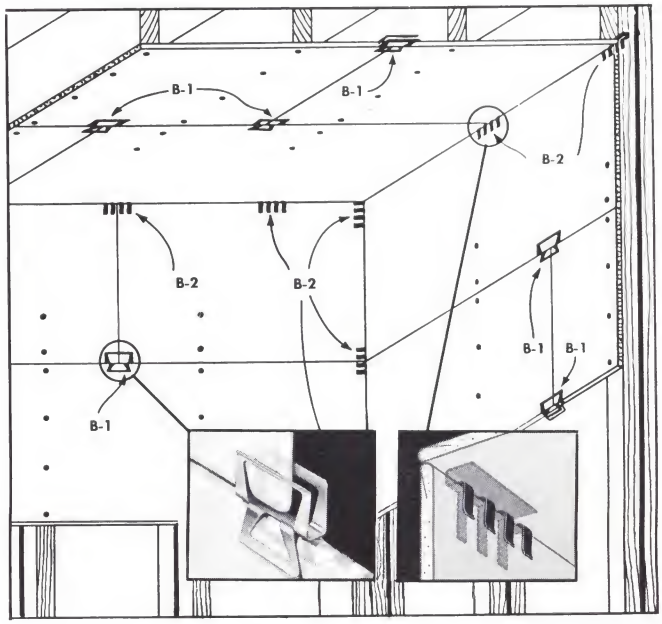
BRIDJOINT B-2
corner clip



resilient ceiling attachment

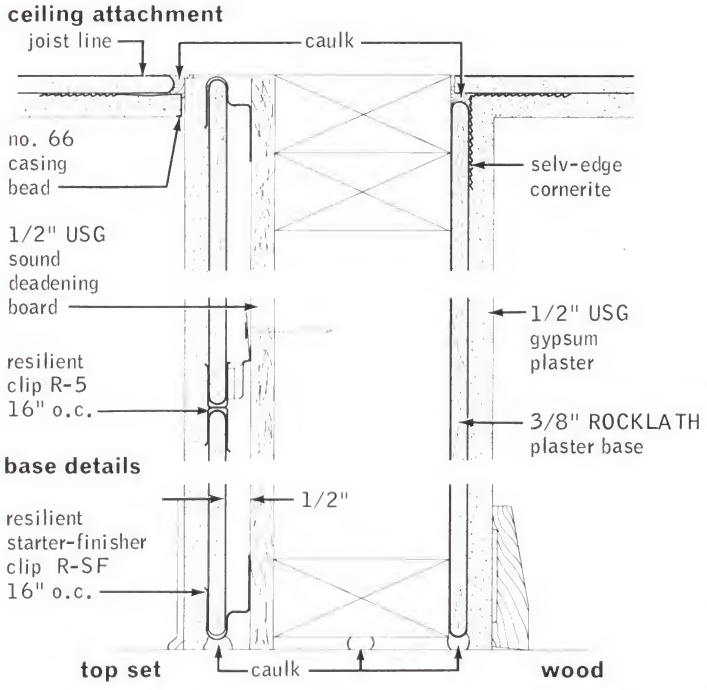


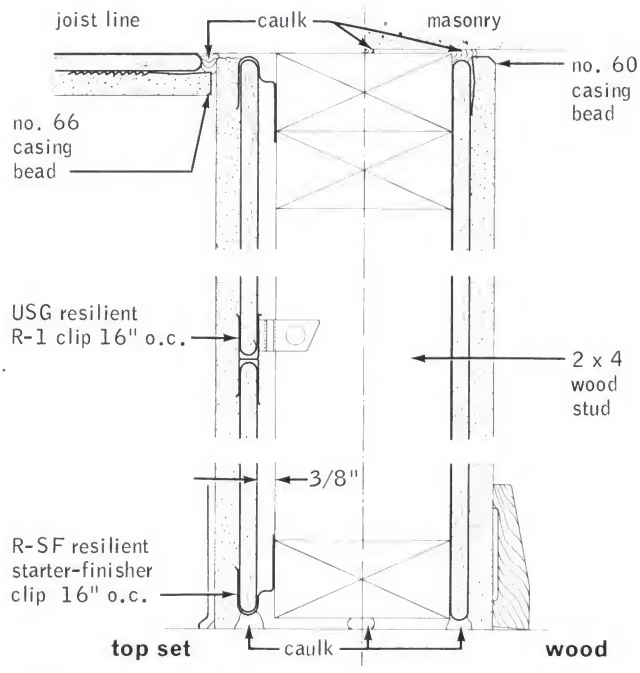
wood frame resilient clip attachment



BRIDJOINT system slotted stud

details





function and utility *(continued from page 1)*

to wood framing members, sound control and a hard, abrasion-resistant, easily decorated wall and ceiling surface.

Fire Resistance—One-hour fire-resistance ratings have been established. The systems provide acceptable fire protection for wood framing members in walls and ceilings.

Sound Control—The Resilient Clips reduce the transfer of air-borne sounds and produce a partition with up to 56 STC —suitable for party walls.

Crack Resistance—Resilient clip attachment markedly reduces the possible transmission of stresses due to structural movement to the lath and plaster membrane, thereby reducing the incidence of cracking.

Economy—The cost of resilient clips is small compared to the cost of alternate methods of achieving the desired sound isolation and crack-resistant characteristics. Increasing the mass of the construction, or employing staggered studs in partitions, are costly methods of improving sound transmission loss characteristics, and usually do not provide the additional crack resistance of resilient clips.

limitations

1. Maximum support spacing: 16″ o.c. for ⅜″ ROCKLATH; 24″ o.c. for ½″ ROCKLATH.

2. Three-coat plastering is required on resiliently attached ROCKLATH ceilings.

3. Perforated ROCKLATH is not recommended for resilient ceiling attachment.

sound attenuation factors

test no.	method	decibel frequency in cps											STC
		125	175	250	350	500	700	1000	1400	2000	2800	4000	
TL-62-348	Lab	39	42	45	49	48	48	50	45	44	48	54	44
USG-119-FT-G&H	Lab	31	46	46	48	54	58	60	60	58	63	66	54
USG-121-FT-G&H	Lab	31	42	46	50	54	57	59	57	54	56	63	54
USG-118-FT-G&H	Lab	35	45	46	50	55	58	59	59	59	63	63	56

specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *Lath and plaster surfaces will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that lath and plaster surfaces be isolated from the following structural elements by control joints, "floating angles", or other means where:*

a. *a partition or ceiling abuts any structural elements, dissimilar wall or partition assembly, or other vertical penetration.*

b. *the construction changes within the plane of the partition or ceiling.*

In long partition runs, control joints should be provided no more than 30′ o.c. Door frames extending from floor to ceiling may be used as control joints. For doors less than ceiling height, control joints extending from the center or both corners of the frame to the ceiling may be used.

Expansive ceiling areas should have control joints, spaced not to exceed 50′ in either direction. The continuity of both lath and plaster should be broken under control joints. Control joints may be positioned to intersect light fixtures, heating vents, air diffusers, etc., which are usually considered weak spots.

3. *Holes cut in a thin lath and plaster membrane such as door frames, borrowed lights, vents, grilles, access panels, light troffers, etc., cause a concentration of stresses in the plaster. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy and design, a control joint is not otherwise specified.*

4. *Where contact or furred ceilings occur under roof construction, the plenum or attic space should be vented according to recommended engineering practice.*

5. *To retain maximum sound isolation, the integrity of the partition or ceiling should not be voided by openings such as doors, electrical outlets, medicine cabinets, vents, etc., so as to*

*Reg. U.S. Pat. Off.

create sound leaks. Use sand aggregate only; do not use lightweight aggregates. Caulk under runners, around openings, and partition perimeter.

6. *Gypsum plaster can be satisfactorily used with radiant heating installations; see separate Systems Folder on RED TOP* Radiant Heat Plaster and Wood Framing.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill. 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. ROCKLATH Plaster Base (⅜″) (½″) (Plain) (Perforated) (Insulating) (16″ x 48″), (16″ x 96″), (24″ x specified lengths).
b. USG R-1 Resilient Field Clip.
c. USG R-2 Resilient Corner Clip.
d. USG R-5 Resilient Clip.
e. USG R-SF Resilient Starter-Finisher Clip.
f. BRIDJOINT B-1 Field Clip.
g. BRIDJOINT B-2 Corner Clip.
h. USG Casing Bead (specify type from page 2).
i. USG Corner Bead (specify type from page 2).
j. USG Self-Furring Junior Diamond Mesh Metal Lath.
k. ½″ USG Wood Fiber Sound Deadening Board, 4′ x 8′, 10′, 12′.
l. 3″ THERMAFIBER* Insulating Wool Blankets.
m. Nails—13 ga. (1⅛″) (1¼″) long, 19/64″ flat head blued (not available from U.S.G.).
n. Staples—16 ga. galvanized flattened wire, flat crown 7/16″ wide, (⅛″) (1″) legs having divergent points (not available from U.S.G.).

plaster base attachment

a. gypsum base—resilient attachment with R-1 clips

⅜″ ROCKLATH Plaster Base shall be applied with end joints staggered and with ¼″ space between the lath and the adjacent surfaces around the partition perimeter. R-SF Clips shall be nailed to the framing 16″ o.c. at the top and bottom to provide attachment for the first and last courses of ROCKLATH. Gypsum lath shall be attached to the framing members with USG R-1 Resilient Clips nailed to framing and placed at every intersection of ROCKLATH edges with framing members. At corners, attach ROCKLATH with USG R-2 Resilient Clips so it is secured by the clips spaced 16″ o.c. in both directions. USG Corner Beads and other specified lathing accessories shall be stapled only to ROCKLATH.

b. sound deadening board—resilient attachment with R-5 clips

½″ wood fiber sound deadening board shall be applied with long dimension parallel to studs and with joints occurring over framing. Attach board with 1⅛″ long nails spaced 12″ o.c. along the vertical edges and top and bottom plate and 30″ o.c. along the intermediate framing.

ROCKLATH plaster base shall be applied face out with the long dimension across the framing members and with the end joints staggered in successive courses. ROCKLATH shall be attached to framing with USG R-5 Resilient Clips placed at every intersection of ROCKLATH edges with framing members. R-5 clips shall be attached with a 5d coated nail driven through the sound deadening board into the framing. ¼″ space between the lath and the adjacent surfaces shall be left around the partition perimeter.

c. direct attachment with BRIDJOINT lathing system

ROCKLATH Plaster Base shall be applied face out with the long dimension across the framing members and with end joints staggered in successive courses. Allow ¼″ clearance space between lath and the adjacent surfaces around the partition perimeter. Ends of lath shall fall between framing members and be aligned and engaged using the BRIDJOINT B-1 Field Clip. All joints shall be butted together and the lath shall be accurately cut and neatly fitted around all electrical outlets, openings, etc. Apply BRIDJOINT B-2 Corner Clip at all interior angles.

Fasteners shall be (nails) (staples). For ⅜″ ROCKLATH and maximum support spacing of 16″ o.c. use 4 fasteners, 5″ o.c., per 16″ width of lath; 5 per 24″ width of lath. For ½″ ROCKLATH and maximum support spacing of 24″ o.c. use 5 fasteners, 4″ o.c., per 16″ width of lath; 6 per 24″ width of lath. Fasteners shall be placed at least ⅜″ from edges and ends of lath. Staples shall be driven with the crown parallel to the framing member in such a manner that the crown bears tightly against the lath but does not cut the face paper.

lathing accessories

a. Metal Corner Bead No. (000000) shall be provided on all external plaster corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. Fasten securely with galvanized staples, etc., spaced not over 8″ o.c., staggered in two wings.

b. Casing Bead No. (000000) shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed. Staple in place.

c. Reinforcing. Install a strip of self-furring diamond mesh lath over joints between dissimilar plaster bases. At all openings, reinforce the corners attaching a 12″ x 24″ piece of self-furring diamond mesh lath diagonally across the corners. Staple in place.

d. Caulking—A non-hardening non-skinning resilient caulking compound shall be applied under plates, around outlet boxes and in the ¼″ space between the lath and adjacent surfaces around the partition perimeter.

UNITED STATES GYPSUM

direct attachment

partitions **a**

SHEETROCK* GYPSUM WALLBOARD 1-Layer & Wood Framing

1386

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
1 hr. est	Stag Wd Stud—⅝" SHEETROCK FIRECODE gypsum wallbd—2x3 16" o.c.—2x3 plates 1" apart—wallbd att 1¼" Type W screws 16" o.c.—2" THERMAFIBER ins wool blkts one side wt 8 width 7½"	USG-106-FT-G&H (s)	51		153	Best value in 50 stc range for this type of party wall constr.	a-1386
1 hr. est	Slot Wd Stud—⅝" SHEETROCK FIRECODE gypsum wallbd—2x4 slotted studs 16" o.c.—3" THERMAFIBER ins wool blkts—wallbd att direct with 1¼" Type W screws 12" o.c.—joints fin wt 7 width 4⅞"	USG-29-FT-G&H (s)	48		135		a-1386
1 hr. est	Wd stud—⅝" SHEETROCK FIRECODE gypsum wallbd—2x4 16" o.c.—2" THERMAFIBER ins wool blkts—wallbd screw att with 1¼" Type W screws 16" o.c.—joints fin wt 7 width 4⅞"	USG-105-FT-G&H (s)	35		131		a-1386
1 hr.	Wd Stud—⅝" SHEETROCK FIRECODE gypsum wallbd—2x4 16" o.c.—wallbd nailed 7" o.c.—1⅞" cem ctd nails—joints exp or fin wt 7 width 4⅞"	UL Des 5-1 hr (f) USG-30-FT-G&H (s)	34		111	Sound rating obtained with joints taped	a-1386
ceiling applications							
1 hr.	½" SHEETROCK FIRECODE "C" gypsum wallbd ceiling—1" nom wd sub & fin flr—2x10 wd joist 16" o.c.—wallbd att with 5d cem ctd nails 6" o.c.—joints fin clg wt 3	UL Des 42-1 hr (f)	N/A		clg matls 23		a-1386
1 hr.	⅝" SHEETROCK FIRECODE gypsum wallbd ceiling—Amer Plywood Assn 2-4 1 flr 4x10 wd joist 48" o.c.—USG met fur chan spaced 24" o.c.—wallbd att with 1" Type S screws—joints fin clg wt 3	UL Des 28-1 hr (f)	N/A		clg matls 36	Only 1-hr. residential drywall system based on 48" joist spacing	a-1386
1 hr.	⅝" SHEETROCK FIRECODE gypsum wallbd ceiling—1" nom wd sub & fin flr—2x10 wd joist 16" o.c.—wallbd att with 6d nails 6" o.c.—joints fin clg wt 3	UL Des 1-1 hr (f) CK-6412-7 (s) CK-6412-8 (s)	37 38	(INR) −19 +5	clg matls 26	In CK-6412-8 test, 44-oz. carpet & 40-oz. pad added atop flooring	a-1386
1 hr. est	⅝" SHEETROCK gypsum wallbd ceiling—1¼" nom wd sub & fin flr—2x10 wd joist 16" o.c.—3" THERMAFIBER ins wool blkts betw joists—wallbd att with 6d nails 6" o.c.—joints fin clg wt 3	CK-6412-6 (s) CK-6412-5 (s)	40 39	(INR) −18 +7	clg matls 35	In CK-6412-5 test, 44-oz. carpet & 40-oz. pad added atop flooring	a-1386
45 min.	½" SHEETROCK FIRECODE gypsum wallbd ceiling—1" nom wd sub & fin flr—2x10 wd joist 16" o.c.—wallbd att with 5d cem ctd nails 6" o.c.—joints fin clg wt 3	UL Des 1-45 min (f) NBS-716 (s)	36		clg matls 23	Basic 45-min assembly—sound attenuation test	a-1386
wall furring application							
—	Wood furring strips 16" o.c., ½" Insulating SHEETROCK, PERF-A-TAPE Joint Treatment	—	—	—	100	Surface not isolated from structural stresses	a-1386

description

This basic drywall load-bearing construction is suitable wherever fire protection is desired with wood framing. SHEETROCK Gypsum Wallboard is applied direct to wood framing members—either vertically, with long edges parallel to framing, or horizontally with long edges at right angles to framing members. Horizontal application, recommended except in fire-rated partition construction or for predecorated wallboard, provides greater strength, reduces joint treatment and blocking needed, compensates for unevenness in framing alignment. Fastening of wallboard is by four alternate methods:

1. *Standard single nailing*—spacing c. to c. 6" to 7" for ceilings, 7" to 8" for walls.

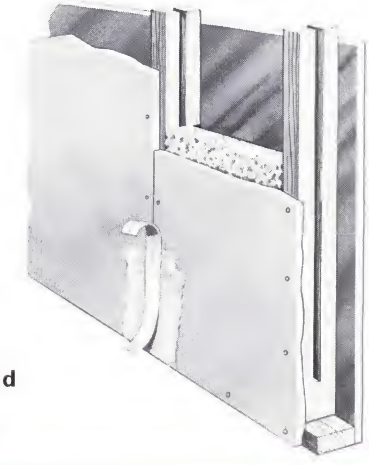
2. *Double nailing*—for minimizing defects due to loosely nailed wallboard. First nails spaced 12" o.c., followed by second nails within 2" of first.

3. *Screw application*—best known insurance against fastener pops caused by loosely attached board. 1¼" USG® Type W Drywall Screw is used.

4. *Adhesive nail-on*—continuous bead of SHEETROCK Brand DWA-14 or DWA-10 Adhesive applied to framing plus supplementary nailing; improves bond strength by 50% to 100%, greatly reduces face nailing needed.

This assembly is completed by finishing with the PERF-A-TAPE* or DURABOND* Joint System and decorating—both steps unnecessary in walls, however, when predecorated ULTRAWALL* or SHEETROCK Vinyl panels are used. SHEETROCK for this construction is available in three thicknesses and seven types. With Insulating (foil back) SHEETROCK Wallboard the system is effective as a vapor barrier, offers significant insulating value, and provides economical furring for exterior walls.

(*continued on page 6*)

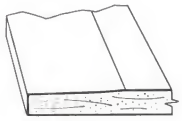


slotted stud partition with wool

A.I.A. File No. 20-B-2.1/23-L

*Reg. U.S. Pat. Off.

components



tapered edge
SHEETROCK gypsum wallboard

beveled edge, vinyl coated
SHEETROCK gypsum wallboard

see "gypsum wallboard and joint treatment" product catalogs for full description on accessories & sizes

1-1/4" USG drywall screw—type W—bugle head

1-1/4" GWB-54 annular ring nail

1-3/8" annular ring nail

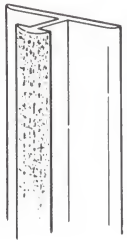
1-5/8" 5d gypsum wallboard nail cement coated

1-7/8" 6d gypsum wallboard nail cement coated

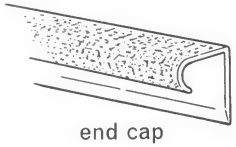
1-1/8" USG matching color nail (steel)

1-3/8" USG matching color nail (brass)

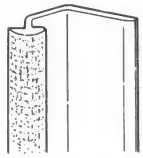
SHEETROCK moldings



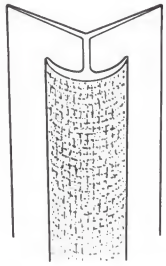
divider



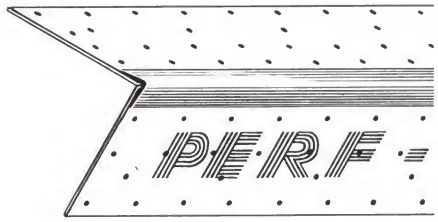
end cap

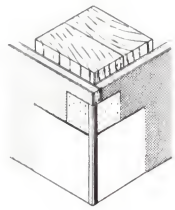


inside corner

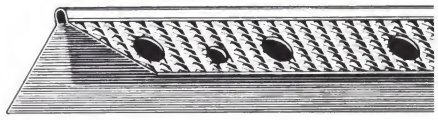


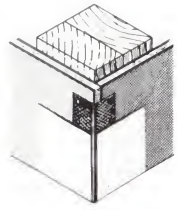
outside corner



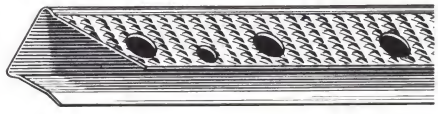


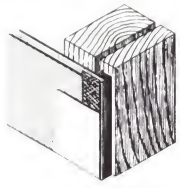
no. 100 PERF-A-BEAD





DUR-A-BEAD corner reinforcement





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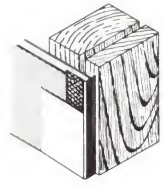

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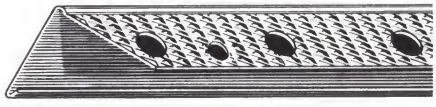

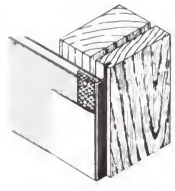

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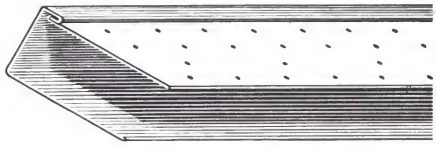
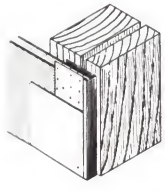
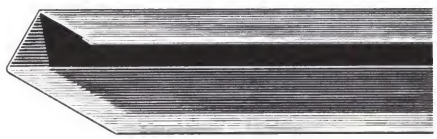
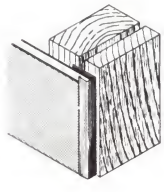




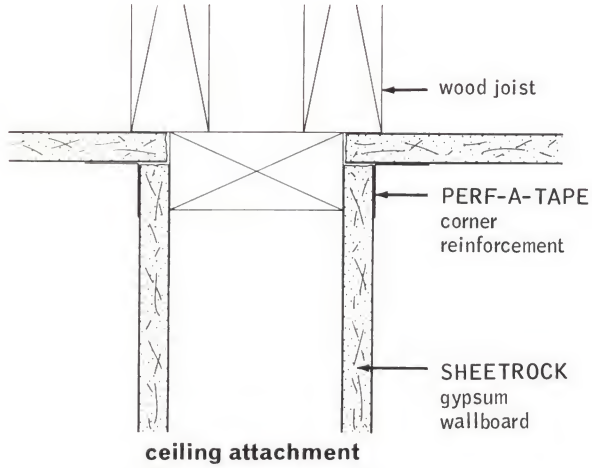
PERF-A-TRIM



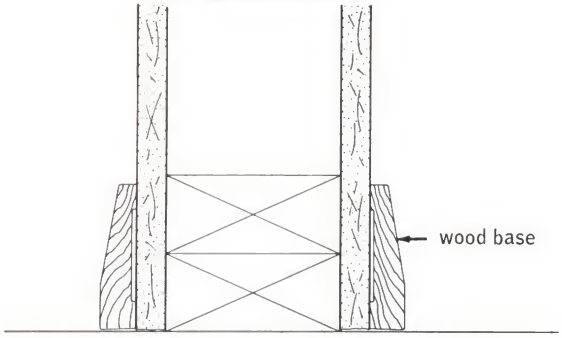


USG metal trim

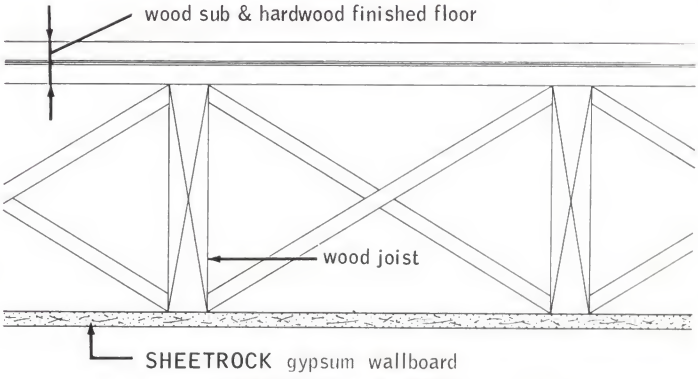
details



ceiling attachment

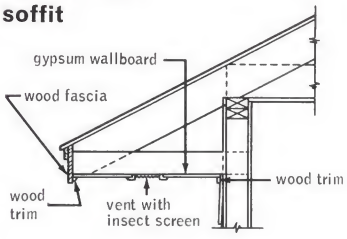


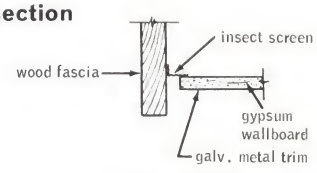
base attachment



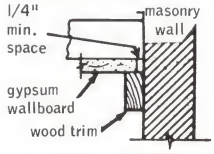
ceiling cross section

SHEETROCK soffit

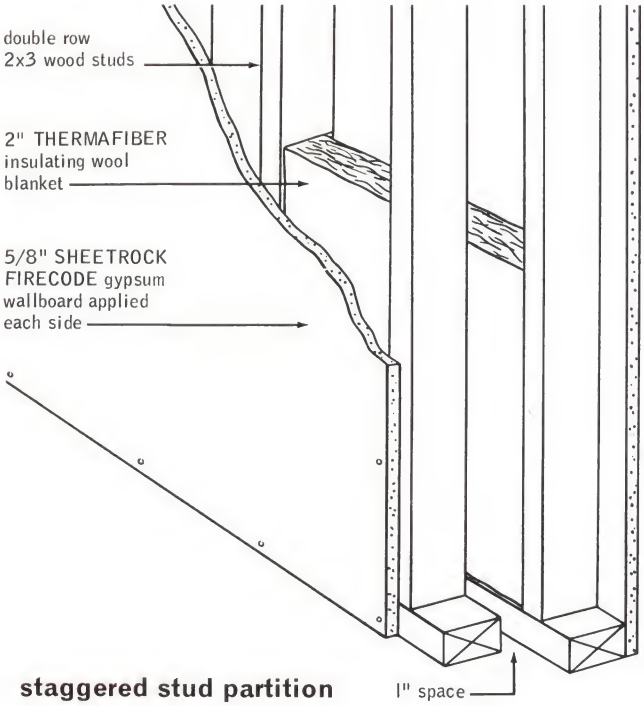




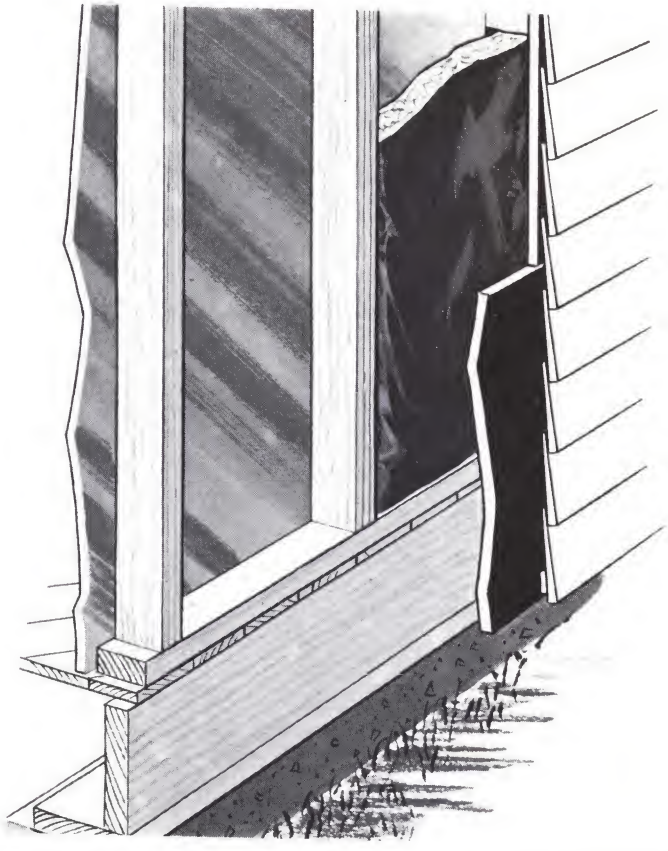
wood fascia



masonry wall



staggered stud partition



Exterior wall assembly with foil-backed Insulating SHEETROCK Wallboard, THERMAFIBER Insulating Wool, FIRECODE* Sheathing, MAYFAIR Plastic-Surface Mineral Siding.

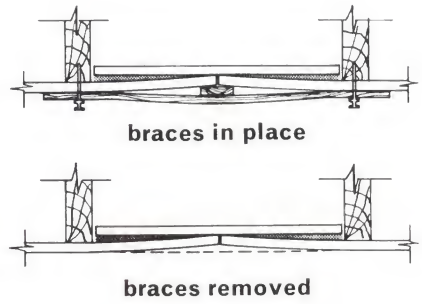
*Reg. U.S. Pat. Off.

details

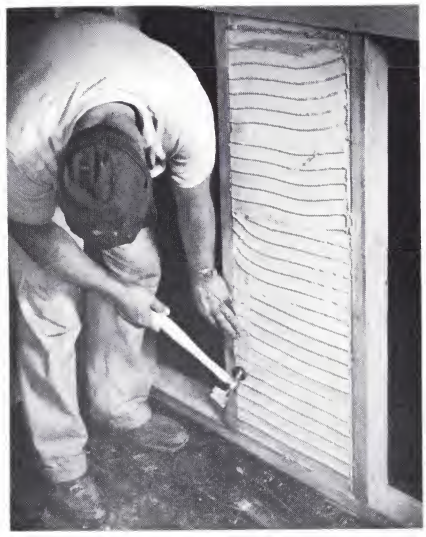
back-blocking procedure

A. Wallboard is applied with long edges at right angles to joists. Backing blocks 8" wide, cut from scrap wallboard, are cemented and placed along full length of edge and ends of board. Floating of end joints makes it easier to form a good joint over a twisted stud or joist.

B. Immediately after all blocks are in place, the next board, which has been previously cut, is erected. Ends are loosely butted.



C. Cross section shows how floated end joint is tapered and back blocked. Brace is temporarily nailed over wood strip (top drawing) which depresses ends of boards. When strips are removed, tapered formation remains as shown in bottom drawing.



D. Side wall blocks are positioned between studs, held flush with face by wallboard strips which have been recessed against sides of studs. Blocking must be flush or slightly back of nailing face of studs.

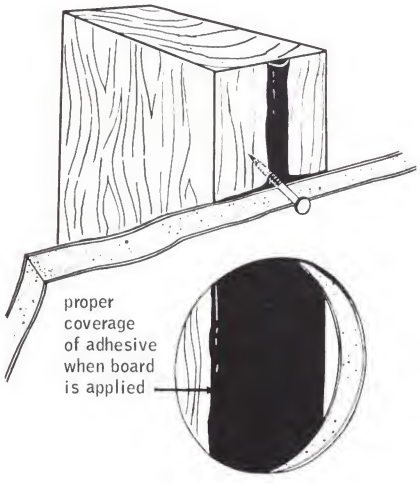
E. After wallboard panel is nailed in place, adjacent panel is immediately butted over backing block. End joints between upper and lower courses of panels are staggered.

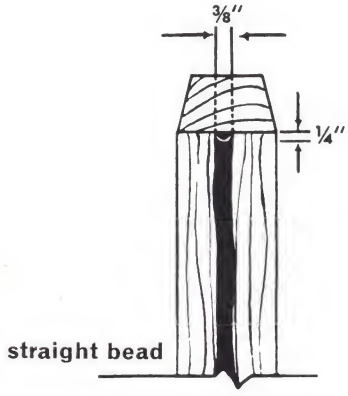
F. To complete back blocking of both sides of a critical wall, same procedure is followed on opposite side of wall. High ridges of cement are applied so as to be at right angles to horizontal joint formed by SHEETROCK soon to be applied.

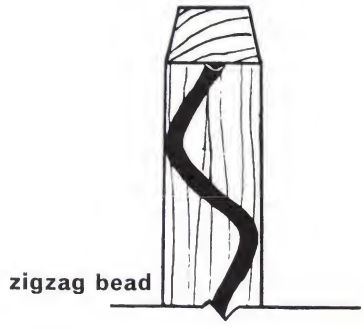
G. Application of top sheet of wallboard follows immediately after spreading adhesive on the blocks. After 24 to 48 hours drying time, joints are treated in normal manner.

details

adhesive nail-on system

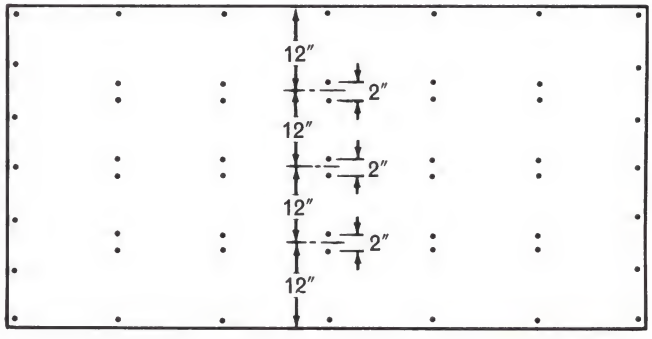




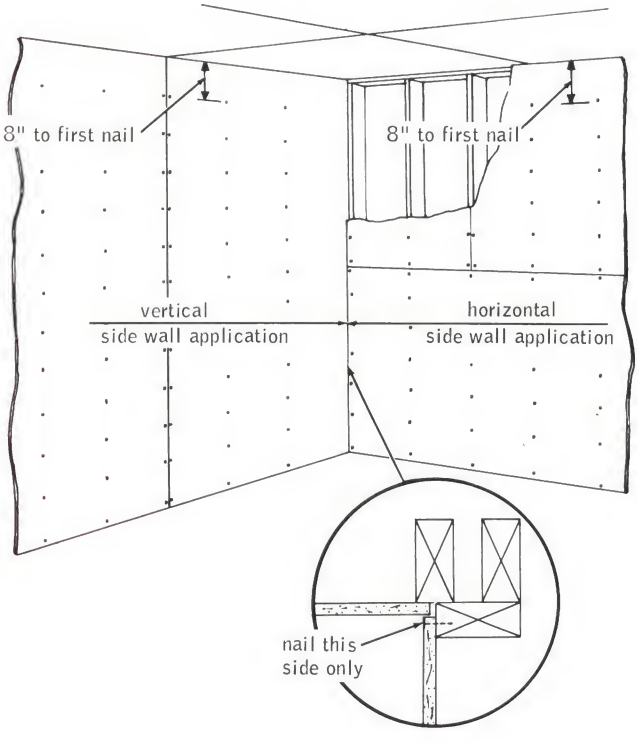


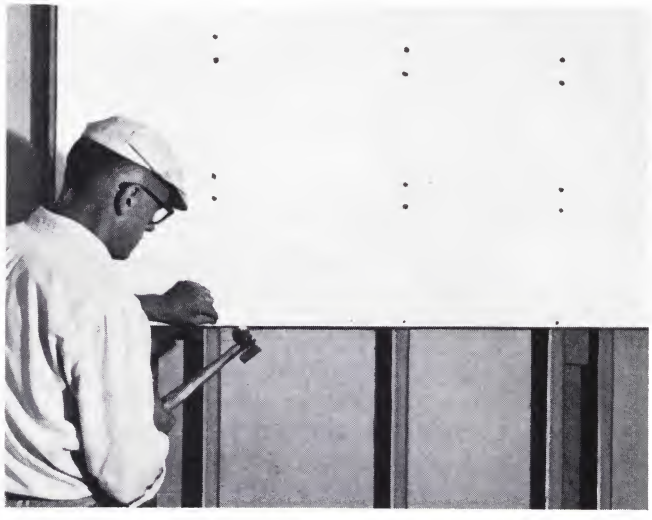
Full information on systems shown here is available in USG Gypsum Drywall Construction Handbook, WB-52

double nailing system



floating interior angle system





*Reg. U.S. Pat. Off.

description (*continued from page 1*)

Two other proven methods upgrade job quality:

Back-Blocking Joint Reinforcement—a patented system designed to minimize an inherent joint deformation ("ridging") that may occur with adverse job and weather conditions.

Floating Interior Angle System—application of board to effectively reduce nail pops and angle cracking which may result from stresses at intersections of walls and ceilings.

function and utility

An economical, quickly completed method of constructing walls and ceilings where fire resistance requirements do not exceed one hour—also usable for open porch and carport ceilings and soffits of eaves and rakes when the construction protects the SHEETROCK Wallboard from direct contact with water (see Details and Specifications). Variations of the system meet other special requirements as outlined below.

Fire Resistance—1-hour rating for partition with ⅝″ SHEETROCK FIRECODE* gypsum wallboard and for ceiling with ½″ SHEETROCK FIRECODE "C" wallboard (see table, page 1).

Sound Isolation—Where a party wall with maximum sound loss is required, best value in its class is the staggered 2x3 stud partition (see table, page 1) with STC of 51. Erected on plates 1″ apart, partition has single-layer ⅝″ SHEETROCK FIRECODE facings and 2″ THERMAFIBER* Insulating Wool Blankets in one side (see detail, page 3).

More economical, yet providing a 48 STC—suitable for party walls—is the patented USG Slotted Stud System conventionally framed but with ⅛″ slots cut through studs lengthwise. ⅝″ SHEETROCK FIRECODE face layers are backed by 3″ THERMAFIBER Blankets between studs. For details, see systems folder on SHEETROCK/wood stud 2-layer construction.

test no.	method	decibel frequency in cps											STC
		125	175	250	350	500	700	1000	1400	2000	2800	4000	
USG-106-FT-G&H	Lab	28	39	43	47	53	57	60	64	59	60	65	51
NBS-716	Lab	34	25	24	30	36	39	42	48	51	51	56	36
USG-29-FT-G&H	Lab	31	33	42	45	49	51	51	52	46	48	50	48

Light Weight—SHEETROCK for these assemblies weighs approximately 2.6 psf in ⅝″ thickness, 2.0 in ½″, and 1.5 in ⅜″. Conventional partition assemblies weigh 6 to 8 psf.

limitations

1. Maximum frame spacing: ceilings—⅜″ SHEETROCK, 16″ o.c.; ½″ and ⅝″ SHEETROCK, 16″ o.c. if applied with long edge parallel to framing or 24″ o.c. if applied across the framing. Sidewalls—⅜″ SHEETROCK, 16″ o.c.; ½″ and ⅝″ SHEETROCK, 24″ o.c.

2. Not recommended where exposure to moisture is extreme or continuous. SHEETROCK W/R Wallboard, made water-resistant all the way through by special core and paper, is recommended as a base for wall tile in bathrooms and other high moisture areas (see USG Gypsum Wallboard Product Folder for details and specifications).

3. Where ceiling radiant heat is planned, 2-layer wallboard construction should be used (see separate USG Systems Folder).

4. Not recommended for exterior soffits and ceilings which project upwards and away from the building proper.

5. Direct attachment to wood framing with fastener penetration into wood exceeding 1″ is not recommended except when required to meet fire rating.

specifications

notes to architect

1. *Drywall partitions and ceilings will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that wallboard surfaces be isolated from the following structural elements by control joints or other means where:* **(a)** *A partition or ceiling abuts any structural element or dissimilar wall or ceiling assembly;* **(b)** *The construction changes within the plane of the partition or ceiling.*

In long partition runs, control joints should be provided no more than 30′ o.c. Door frames extending from floor to ceiling are recommended as control joints. For doors less than ceiling height, control joints extending from both corners of the frame to the ceiling may be used.

Expansive ceiling areas should have control joints spaced not to exceed 50′ in either direction. The continuity of wallboard and supports should be broken over control joints. Control joints may be positioned to intersect light fixtures, heating vents, air diffusers, etc., which are usually considered weak spots.

2. *Holes cut in a thin wallboard membrane such as door frames, borrowed lights, etc., cause a concentration of stresses in the wallboard. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

3. *Ceramic Tile—SHEETROCK* W/R Gypsum Wallboard is recommended as a base for the adhesive application of ceramic, metal and plastic tile (see USG Gypsum Wallboard Folder).*

4. *Where this partition is used as a sound barrier, the use of non-hardening caulking material to seal all cut-outs, such as at electrical fixtures and to seal all intersections with the adjoining structure, is recommended. Eliminate cutting holes back to back and adjacent to each other. Door and borrowed light openings are not recommended when this partition is used as a party wall.*

5. *The addition of THERMAFIBER Insulation Blankets in the stud cavity, pressed tightly in place, stapled to the back side of one face of the partition or the sides of the studs will increase the sound transmission loss of the partition.*

6. *Where contact or furred ceilings occur under roof construction, the plenum or attic space should be vented according to recommended engineering practice.*

7. *For wood framing requirements, heating and ventilating recommendations, see USG Gypsum Wallboard Product Folder.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

general conditions

In cold weather and during the period of wallboard application and joint finishing, temperatures within the building shall be maintained uniformly within the range of 55° to 70° F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

materials

See USG product folders in this series:

Joint Treatment Folder for Joint Treatment Specifications.

Paint Products Folder for Paint Specifications.

Gypsum Wallboard Folder for information on Wallboard System Components.

All materials herein specified shall be manufactured by the United States Gypsum Company unless otherwise indicated.

a. Gypsum Board—48″ wide—(⅜″) (½″) (⅝″) thick Tapered Edge SHEETROCK (Regular) or (Insulating—foil back); (½″) (⅝″) thick SHEETROCK FIRECODE; ½″ thick SHEETROCK FIRECODE "C"; ⅜″ thick ULTRAWALL panels (finish); ½″ thick SHEETROCK Vinyl panels (finish); (½″) (⅝″) thick SHEETROCK W/R Wallboard—lengths as required.

b. Joint Treatment—PERF-A-TAPE or DURABOND Joint System.

c. Adhesive
—(for Back-Blocking System)—PERF-A-TAPE Joint Compound (embedding type).
—(for Adhesive Nail-On Board Application)—SHEETROCK Brand DWA-14 or DWA-10 Adhesive.

d. Fasteners
—Screws—1¼″ USG Drywall Screw Type W.
—Nails (specify type from Pg. 2—not available from U.S.G. except for USG matching color nails).

e. USG Metal Trim (specify type from Pg. 2).

f. SHEETROCK Metal Moldings (for ULTRAWALL and SHEETROCK Vinyl Panels)—to match specified finishes as required.

g. USG Corner Bead—DUR-A-BEAD*, PERF-A-BEAD*, ECONO Corner Reinforcement (specify type from Pg. 2).

h. Wallboard Sealant (for SHEETROCK W/R Wallboard)—SHEETROCK Brand W/R Sealant.

i. Caulking—Presstite 579.64 Mastic as manufactured by Presstite Division of Interchemical Corporation or equal.

wallboard erection (treated joints)

All ends and edges of all gypsum wallboard shall occur over nailing members, except when joints are at right angles to framing members as in horizontal application or when the end joints are to be backblocked.

SHEETROCK Wallboard shall be applied first to the ceiling and then to the walls. To minimize end joints, use wallboard of maximum practical lengths. Boards shall be brought into contact, but shall not be forced into place. Where ends or edges abut, they shall be neatly fitted.

End joints shall be staggered. Joints on opposite sides of a partition shall be so arranged as to occur on different studs.

Wallboard shall be attached to framing supports by: (Standard Single Nailing Method) (Adhesive—Nail-On Method) (Double Nailing Method) (Power-driven USG Drywall Screws).

Standard single nailing method—Attach wallboard with nails herein specified spaced not to exceed 7″ o.c. for ceilings and 8″ o.c. for walls.

Adhesive—nail-on method—Attach wallboard with SHEETROCK Brand (DWA-14) (DWA-10) Adhesive applied in a continuous ⅜″ bead at the center of attachment to the face of framing members. Where two pieces of wallboard meet on a framing member, apply a serpentine bead with an 8″ repeat pattern permitting adhesive contact to both panels. Do not apply adhesive to members such as bridging, diagonal bracing, etc., into which no supplemental fasteners will be driven. Immediately following contact of wallboard to adhesive, apply fasteners per manufacturer's directions.

Double nailing method—Attach wallboard with nails herein specified. Apply first nails spaced not to exceed 12″ o.c. with second nails in close proximity (2″).

Power-driven USG Drywall Screws—Attach wallboard with 1¼″ USG Drywall Screws Type W—spaced not to exceed 12″ o.c. for walls and ceilings. For walls with studs 16″ o.c., screws may be applied not to exceed 16″ o.c.

Fasteners shall be spaced at least ⅜″ from edges and ends of wallboard. Fasteners on all framing members shall be spaced and driven as recommended for specified fastening method. Nails shall not be staggered on adjoining edges or ends. Screws shall be staggered on adjoining edges or ends.

While the fasteners are being driven, the wallboard shall be held in firm contact with the underlying support. Attachment should proceed from central portion of the wallboard towards ends and edges. When nails are used for attaching gypsum wallboard, the nails shall be driven home with the heads slightly below the surface of the gypsum wallboard, in a dimple formed by the crowned face of the hammer striking the last blow. A nail set shall not be used, and care shall be taken to avoid breaking the paper face.

When necessary to cut ends, edges, scribe or make cutouts within the field of the wallboard, it shall be done in a workmanlike manner.

wallboard erection (predecorated ULTRAWALL or SHEETROCK Vinyl panels)

Panels shall be applied vertically to framing spaced (16″) (24″) o.c. Any panels used less than full width shall be positioned with the cut edge at corner.

Nail application—Color-matched nails shall be driven with plastic-headed hammer at 8″ o.c. spacing into all studs. Edge nailings shall be at least ⅜″ from panel edge.

Adhesive application—SHEETROCK Brand DWA-14 Adhesive shall be applied in continuous ⅜″x⅜″ bead in center of all stud faces. After partial drying of adhesive, panels shall be attached, impacted, and nailed with color-matched nails 8″ o.c. along ceiling and floor edges of panels.

Panels shall be finished with SHEETROCK Aluminum Moldings matching specified finishes, according to manufacturer's directions.

wallboard erection (SHEETROCK W/R Wallboard)

(Follow specifications in USG Gypsum Wallboard Folder.)

back-blocking system

Notes to architect: Back blocking is used in single layer gypsum wallboard construction only. Maximum spacing of supports, 24″ o.c.

Select Sections a, b, c or d below, depending upon job requirements. (Floating and tapering end joints requires back blocking. However, end joints may be back blocked without tapering.)

a. All ceiling end joints shall be floated, back blocked and tapered (except at perimeter of room).

b. All ceiling edge joints shall be back blocked (except at perimeter of room).

c. All side wall end joints shall be floated, back blocked and tapered.

d. All horizontal sidewall joints shall be back blocked.

e. Backing blocks shall be ⅜″, ½″ or ⅝″ SHEETROCK Gypsum Wallboard. Use ⅜″ or ½″ thick backing blocks for ½″ wall finish; ½″ or ⅝″ thick blocks for ⅝″ wall finish.

f. Adhesive shall be PERF-A-TAPE Joint Compound (embedding type).

g. All SHEETROCK Gypsum Wallboard shall be applied with the long edges at right angles to the framing. (Wood backing behind joints between framing supports is not required.) Use face side of blocks for lamination if foil back material is used.

h. When floated end joints are specified, gypsum wallboards shall be so positioned that the end joints shall occur midway between supports and per manufacturer's directions.

i. Backing blocks shall be applied where specified in strict accordance with directions of United States Gypsum Company.

*Reg. U.S. Pat. Off.

floating interior angle system

a. Ceilings—SHEETROCK Wallboard for ceilings shall always be applied first. Standard framing practices for corner fastening shall be followed. Wallboard shall fit snugly at all angles.

Horizontal application—Conventional single nail or screw application shall be used where the end of the board abuts a wall intersection. Where the long edges of the board are parallel with the intersection, the first nail or screw shall be nominally 7″ from the wall. Conventional nail or screw spacing shall be used in the remainder of the ceiling area.

Vertical application—Conventional single nail or screw application shall be used where the long edges of the board abut a wall intersection. Where the ends of the board are parallel to the intersection, the first nail or screw shall be nominally 7″ from the wall intersection. Conventional nail or screw spacing shall be used for the balance of the ceiling area.

b. Sidewalls—All wallboard shall be applied to maintain firm contact at the ceiling line and to provide support to ceiling boards previously installed. Along the horizontal angle, the first nail or screw shall be nominally 8″ from the ceiling intersection. At all vertical angles, omit only the corner fastening of the board that is first applied and overlapped in the angle. The overlapping board shall be nailed or screwed in the conventional manner. Conventional nail spacing shall be used in the remainder of the sidewall area.

c. The use of double nailing in conjunction with the floating interior angle system does not alter the nailing requirements for angles specified above. The system does not eliminate the need for conventional framing requirements and ordinary wood back-up or blocking at vertical internal angles.

wall furring application

Suitable wood furring strips shall be attached to exterior walls at 16″ o.c. ½″ Insulating SHEETROCK Wallboard shall be applied with the long dimension at right angles to furring strips and fastened with 1¼″ USG Drywall Screws-Type W spaced 12″ o.c. Joints and fastener heads shall be finished in the prescribed manner. Where there is a possibility of water penetration through the walls, an asphalt felt protection strip shall be installed between furring strips and the wall surface.

exterior ceilings and soffits

Notes to architect: In porch and carport ceilings, framing should be spaced not more than 16″ o.c. for ½″ SHEETROCK Wallboard and 24″ o.c. for ⅝″ SHEETROCK.

In soffits, for eave or rake projections of 26″ or more, framing should be spaced not more than 16″ o.c. for ½″ SHEETROCK and 24″ o.c. for ⅝″ SHEETROCK. For eave or rake projections of 26″ or less, framing may be spaced 24″ o.c. provided both edges of the SHEETROCK Wallboard parallel to the building wall are supported by moldings or other suitable means.

All edges and ends around perimeter of SHEETROCK exterior ceilings or soffits must be supported by moldings of sufficient size and fastened securely to prevent sagging of the wallboard. For best results, back-blocking of all joints, and floating of end joints, are recommended.

Such ceilings and soffits should be protected by (a) eave flashing strips extending inside face of exterior walls not less than 24″ for pitches under 5 in 12, or 12″ for pitches of 5 in 12 or over; (b) suitable metal drip edges extending not less than 3″ under roof shingles; (c) fascia boards of sufficient width to provide minimum ¼″ drip below adjacent trim on underside of eave, rake or ceiling.

Attic spaces above open porches and carport ceilings should be provided with ventilation in compliance with FHA requirements for attic spaces over living quarters. When SHEETROCK is applied direct to rafters, vents should be provided at each end of each span.

Rafters or joist spaces should have minimum of 2″ × full width between rafters or joists, screened vent at each end of each space.

Vent openings should be framed with wood and located within 6″ of outer edge of eave.

Wood facings should be provided between SHEETROCK Wallboard ceilings or soffits of eaves and rakes, and brick or masonry work of any kind.

SHEETROCK Wallboard shall be applied with the long edges at right angles to framing members. Wallboard application and joint treatment shall be accomplished in the same manner prescribed for interior finishing of SHEETROCK. All exposed surfaces shall be painted with a minimum of two coats of USG exterior paint (specify from USG Paint Products Folder).

wallboard accessories

a. (PERF-A-TAPE) (DURABOND) Joint System shall be used on all face board joints and internal angles formed by the intersections of walls and ceilings (specify from USG Joint Treatment Folder).

b. Metal Corner Bead No. (000000) shall be securely installed at all external corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. At least two coats of joint compound shall be applied over beads and each coat feathered out onto panel faces.

c. Metal Trim No. (000000) shall be securely installed where indicated. Finish with PERF-A-TAPE Joint Compound, as required.

d. Fasteners shall be as shown on drawings or as herein specified. Fasteners shall be driven at least ⅜″ from ends or edges of wallboard to provide uniform dimple not over 1/32″ deep. Spot exposed fastener dimples on face layers with at least three coats of joint compound, feathered and sanded smooth.

e. Control Joints shall be provided as indicated and shall consist of two pieces of Metal Trim back to back.

UNITED STATES GYPSUM

direct attachment

partitions **a**

SHEETROCK* GYPSUM WALLBOARD 2-Layer & Wood Framing

1396

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
2 hrs.	Wd Stud—2 layers ⅝″ SHEETROCK FIRECODE gypsum wallbd—2x4 16″ o.c.—base layer 6d nails 6″ o.c.—face layer lamin to base—joints fin wt 12 width 6⅛″	UL Des 4-2 hr (f) TL-57-14 (s)	38		161	Basic 2-hour partition constr.	a-1396
1 hr.	Stag Wd Stud—⅝″ SHEETROCK FIRECODE gypsum wallbd—2 rows 2x3 stag & sep plates 1″ apart—base layer of ½″ USG wd fiber sound dead bd att with 6d ctd nails—face layer 7d ctd nails 7″ o.c.—joints fin wt 9 width 8½″	UL Des 17-1 hr (f) USG-46-FT-G&H (s)	53		175	Good sound isolation —party wall use	a-1396
1 hr. est	Slot Wd Stud—⅝″ SHEETROCK FIRECODE gypsum wallbd —2x4 slotted studs 16″ o.c.—base layer of ½″ USG wd fiber sound dead bd 2 sides att with 5d ctd nails 12″ o.c. —face layer 6d ctd nails 8″ o.c.—joints fin wt 8 width 5⅞″	USG-44-FT-G&H (s)	49		155	Party wall use— good value	a-1396
1 hr. est	Slot Wd Stud—⅝″ SHEETROCK FIRECODE gypsum wallbd —2x4 slotted studs 16″ o.c.—single layer screw appl one side—2 layers opp side base layer screw appl & face layer lamin—joints fin—perimeter caulked wt 8.8 width 5½″	USG 28-FT-G&H (s)	48		143	Party wall use— good sound performance	a-1396
1 hr. est	Wd Stud—⅝″ SHEETROCK FIRECODE gypsum wallbd— 2x4 16″ o.c.—base layer of ½″ USG wd fiber sound dead bd 2 sides att with ctd nails—face layer wallbd 6d ctd nails 8″ o.c.—joints fin wt 8 width 5⅞″	USG-43-FT-G&H (s)	36		151		a-1396
1 hr.	Wd Stud—2 layers ⅜″ SHEETROCK gypsum wallbd lamin & nailed—2x4 16″ o.c.—joints fin wt 7 width 5⅛″	T-118-48-48A-OSU (f)	N/A		133		a-1396
45 min. est	Wd Stud—½″ SHEETROCK gypsum wallbd—2x4 16″ o.c.— base layer ½″ USG sound dead bd att with 1⅝″ ctd nails 12″ o.c.—wallbd face layer strip lamin & 2¼″ ctd nails 24″ o.c. into studs wt 7 width 5⅝″	IBI-5-FT-G&H (s)	42		162	Good where sound resistance more important than fire rating	a-1396

For ceiling applications, see pages 4 to 7.

description

These "Double Wall" systems consist of a face layer of SHEETROCK Gypsum Wallboard job-laminated and/or nailed to a base layer of gypsum or wood fiber board and directly attached to wood framing in walls and ceilings. Because the systems minimize the use of mechanical fasteners in the face layer, finer appearance is the result—together with greater strength and higher fire and sound resistance.

A base layer of SHEETROCK Wallboard, BAXBORD* Gypsum Backing Board or USG® Wood Fiber Sound Deadening Board is nailed or screwed to the framing. The SHEETROCK face layer is applied to the base layer, then treated with the PERF-A-TAPE* Joint System, and decorated—the latter two steps unnecessary when predecorated ULTRAWALL* or SHEETROCK Vinyl panels are used as face layer.

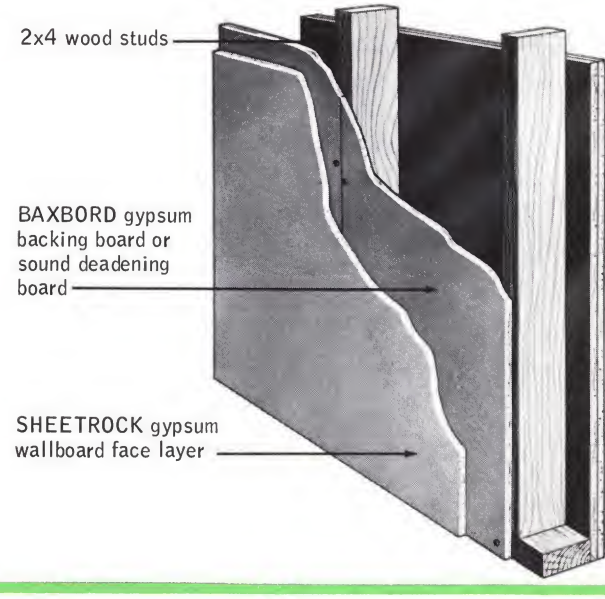
Three alternate framing methods with wood studs spaced 16″ o.c. provide load bearing support in constructions developed to meet fire resistance and sound control requirements in partitions:

1. Conventional 2x4 stud construction, two layers ⅝″ SHEETROCK FIRECODE* Gypsum Wallboard, or FIRECODE or regular SHEETROCK over base layer of USG Wood Fiber Sound Deadening Board. These offer higher sound and/or fire ratings than did the original double wall assembly employing two layers of ⅜″ SHEETROCK.

2. The patented USG Slotted Stud System, conventionally framed but with ⅛″ slots cut through studs lengthwise. ⅝″ SHEETROCK FIRECODE is applied as face layer over sound deadening board, or as double and single layers on opposite sides of the studs.

3. Double row of 2x3 staggered studs set on separate plates 1″ apart, with face layer of ⅝″ SHEETROCK FIRECODE nailed to base layer of sound deadening board. This provides optimum in sound isolation, STC of 53, where one-hour fire resistance (load bearing) is required.

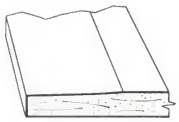
SHEETROCK for these assemblies is available in three thicknesses and six types (see Specifications). Adhesive lamination of face layer to base layer, when both are gypsum wallboard, is by either of two methods: (a) *strip lamination*—USG Laminating Adhesive applied in vertical strips 24″ o.c. and supplementary 1½″ USG Drywall Screws Type G, or (b) *sheet lamination*—USG Laminating Adhesive or PERF-A-TAPE Joint Compound (embedding type) applied over the entire wallboard surface with supplementary Type G screws or temporary supports until adhesive dries. When base layer is wood fiber sound deadening board, face layer of gypsum wallboard is attached by method (b) above, and permanent face nailing is required. (*continued on page 5*)



A.I.A. File No. 20-B-2.1/23-L

*Reg. U.S. Pat. Off.

components



tapered edge
SHEETROCK gypsum wallboard

beveled edge, vinyl coated
SHEETROCK gypsum wallboard

see "gypsum wallboard and joint treatment" product catalogs for full description on accessories & sizes

1-1/4" USG drywall screw—type W—bugle head

1 ½" USG drywall screw—type G—bugle head

1-1/4" GWB-54 annular ring nail

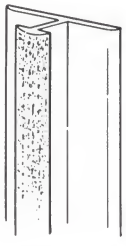
2-1/2" 7d gypsum wallboard nail cement coated

1-7/8" 6d gypsum wallboard nail cement coated

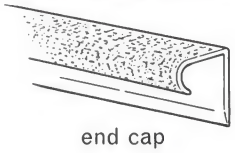
1-5/8" 5d gypsum wallboard nail cement coated

1-7/8" USG matching color nail (steel)

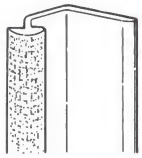
SHEETROCK moldings



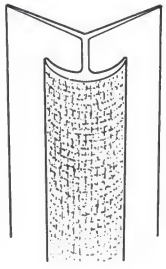
divider



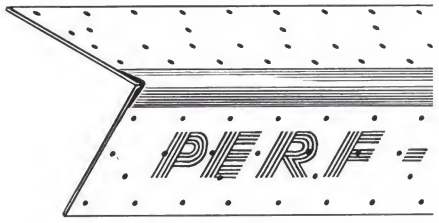
end cap

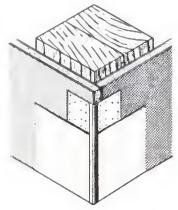


inside corner

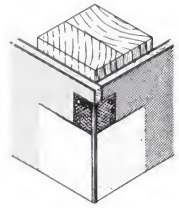


outside corner

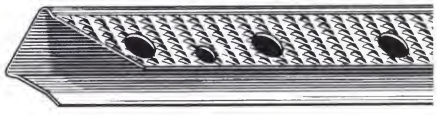




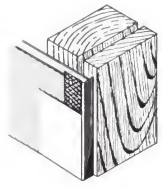
no. 100 PERF-A-BEAD



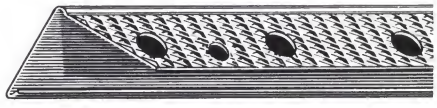
DUR-A-BEAD corner reinforcement

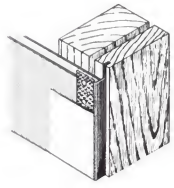


no. 200-A USG metal trim

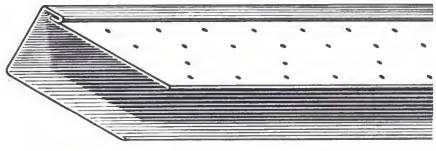


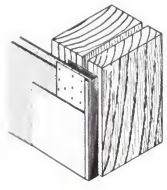
no. 200-B USG metal trim



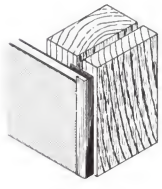


no. 200-C USG metal trim





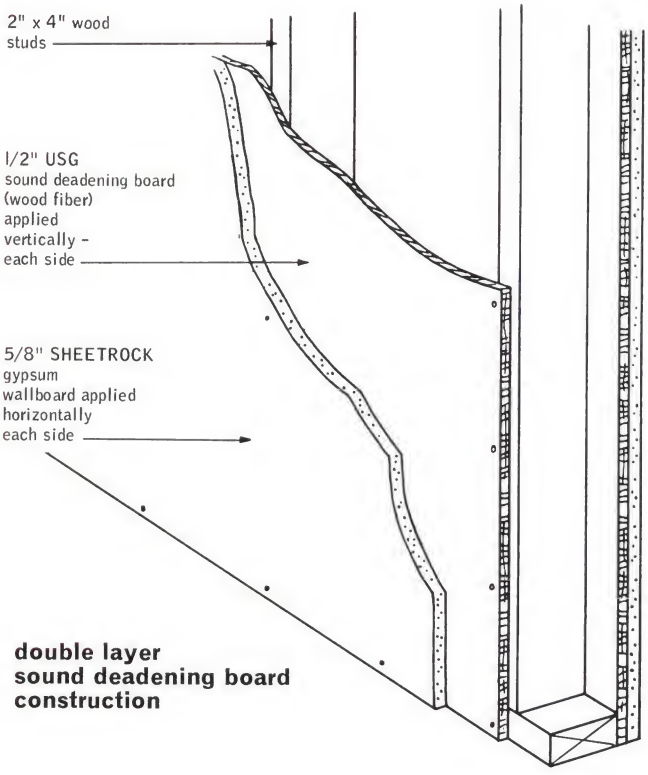
PERF-A-TRIM*



USG metal trim

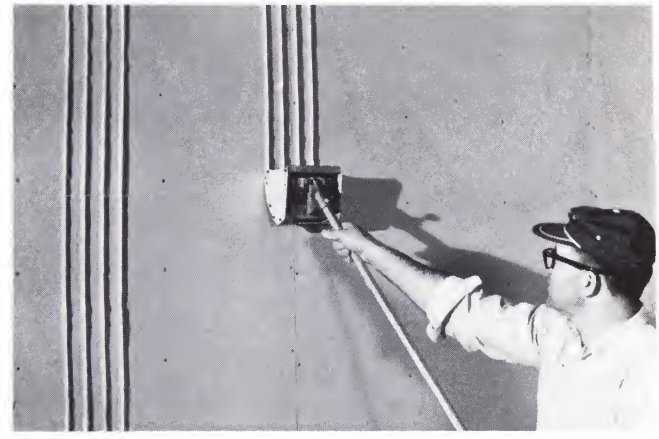
*Reg. U.S. Pat. Off.

details

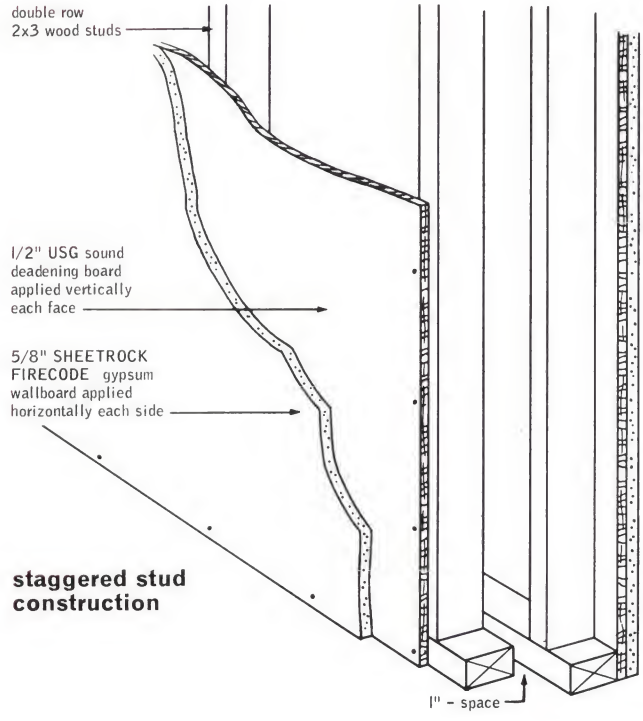


double layer sound deadening board construction

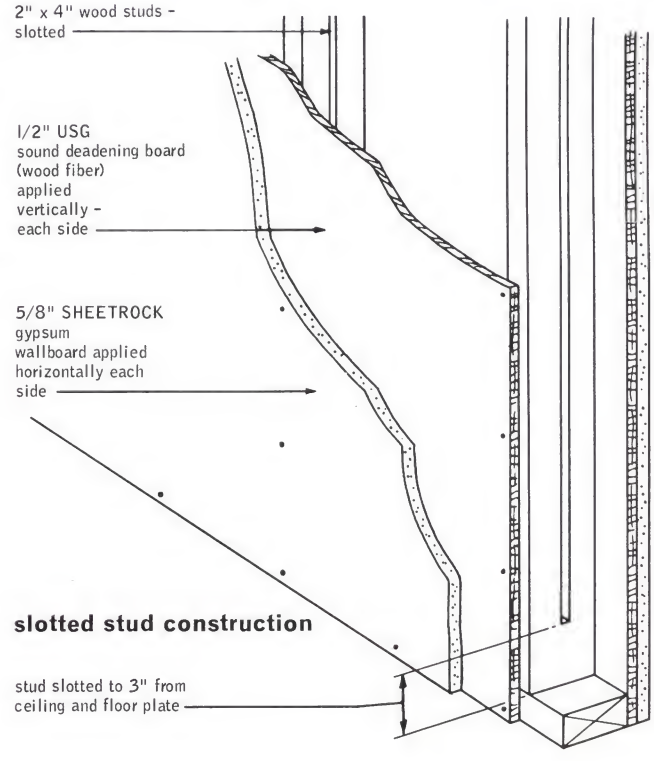
sheet lamination



strip lamination



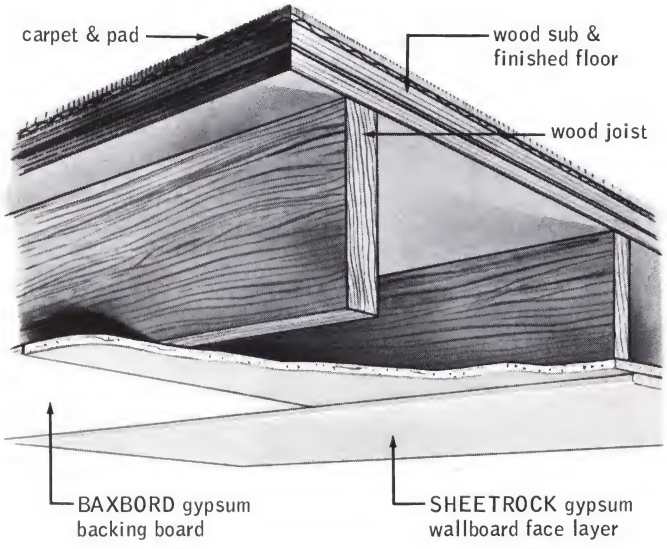
staggered stud construction

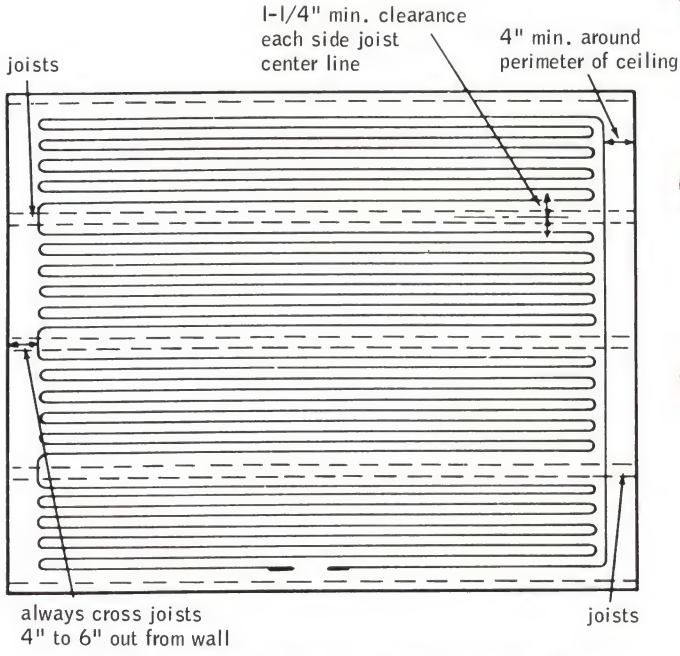


slotted stud construction

details

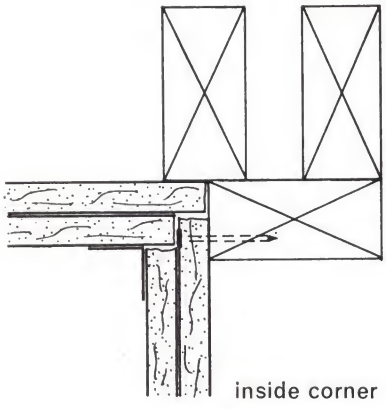
double layer ceiling construction



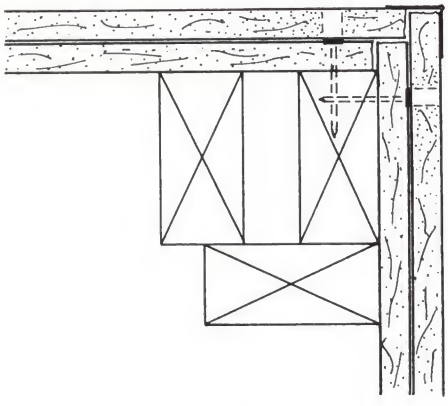


typical layout electrical radiant heated ceiling

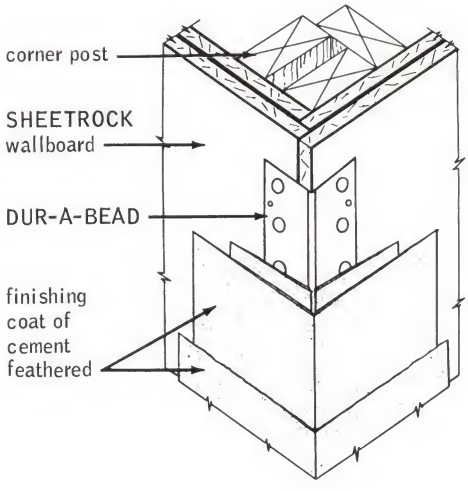
corner details



inside corner



outside corner



metal corner reinforcement

description (*continued from page 1*)

In order to further reduce the possibility of nail pops and angle cracking, the *floating interior angle* method of board application is recommended for the base layer in double-layer wall construction (see details and specifications in USG Folder on SHEETROCK/Wood Framing 1-layer systems). In addition, nailing of the two wallboard layers to form "*floating*" *inside and outside corners* is recommended (see Details, page 4).

function and utility

Sound Isolation—Excellent choices available for party wall use and other critical sound requirements—STC as high as 53 (see table, page 1). A non-hardening, non-skinning caulking compound was used to obtain the sound ratings shown.

Fire Resistance—2-hour rating with double layer of 5/8" SHEETROCK FIRECODE, one hour with four other recommended assemblies (see table, page 1). If a partition requires one-hour rating and sound is not a major consideration, 5/8" FIRECODE single-layer wood frame construction should be considered.

Economy—Wherever sound isolation is important, SHEETROCK systems using slotted wood studs (table page 1) and the RC-1 resilient channel (USG Systems Folder—SHEETROCK & RC-1/Wood Framing) deliver "more db for the dollar."

Low Maintenance—SHEETROCK double wall systems offer easy decoration, reduce possibility of nail "pops" and discoloration over nail heads.

Radiant Heated Ceilings—Double-layer gypsum wallboard also has been used extensively in electric cable radiant heated ceilings. Regular SHEETROCK is the base layer, heating cables are embedded in a filler, and face layer SHEETROCK is attached directly to the adhesive filler. See Details and Specifications for particulars.

limitations

1. Maximum frame spacing: 16" o.c. if 1-hour fire rating is required, also for ceilings with 3/8" base layer; 24" for ceilings with 1/2" base layer applied with long dimension applied across framing, also for all double-layer sidewalls if fire rating of one hour or more is not required.

2. Wall assemblies incorporating wood fiber sound deadening board are limited to *interior* partitions only, and gypsum board face layer must be attached by permanent nailing 7" o.c.

3. Not recommended where exposure to moisture is extreme or continuous. Specially formulated SHEETROCK W/R Wallboard is recommended as a base for wall tile in bathrooms and other high moisture areas (see USG Gypsum Wallboard Product Folder for details and specifications).

4. In radiant heated ceilings where SHEETROCK wallboard is used, maximum surface temperature of the SHEETROCK must not exceed 115°F. Heating coils must not come into direct contact with SHEETROCK surfaces.

5. Direct attachment to wood framing with fastener penetration into wood exceeding 1" is not recommended except where required to meet fire rating.

6. Wood fiber sound deadening board is not recommended as a base layer for 2-layer flat or sloping ceilings with adhesive application of the face layer or as a base layer for radiant heated ceilings.

sound attenuation factors

test no.	method	decibel frequency in cps											STC
		125	175	250	350	500	700	1000	1400	2000	2800	4000	
USG-46-FT-G&H	Lab	32	41	41	47	53	57	57	56	57	59	59	53
USG-44-FT-G&H	Lab	30	33	39	43	45	52	54	55	54	56	56	49
USG-43-FT-G&H	Lab	23	20	35	30	35	41	42	51	47	51	52	36
IBI-5-FT-G&H	Lab	19	28	34	38	43	50	52	54	55	56	54	42
USG-28-FT-G&H	Lab	29	34	39	43	44	50	51	51	46	49	53	48

specifications

notes to architect

1. *Drywall partitions and ceilings will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that wallboard surfaces be isolated from the following structural elements by control joints or other means where:*

a. *A partition or ceiling abuts any structural element or dissimilar wall or ceiling assembly.*

b. *The construction changes within the plane of the partition or ceiling.*

In long partition runs, control joints should be provided at no more than 30' o.c. Door frames extending from floor to ceiling are recommended as control joints. For doors less than ceiling height, control joints extending from both corners of the frame to the ceiling may be used.

Expansive ceiling areas should have control joints spaced not to exceed 50' in either direction. The continuity of wallboard and supports should be broken over control joints. Control joints may be positioned to intersect light fixtures, heating vents, air diffusers, etc., which are usually considered weak spots.

2. *Holes cut in a thin wallboard membrane such as door frames, borrowed lights, etc., cause a concentration of stresses in the wallboard. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

3. *Ceramic Tile—SHEETROCK* W/R Gypsum Wallboard is recommended as a base for the adhesive application of ceramic, metal and plastic tile (see USG Gypsum Wallboard Product Folder).*

4. *Where these partitions are used as a sound barrier, the use of non-hardening caulking material to seal all cut-outs, such as at electrical fixtures and to seal all intersections with the adjoining structure, is recommended. Eliminate cutting holes back to back and adjacent to each other. Door and borrowed light openings are not recommended when this partition is used as a party wall.*

5. *Where contact or furred ceilings occur under roof construction, the plenum or attic space should be vented according to recommended engineering practice.*

6. *For wood framing requirements, heating and ventilating recommendations, see USG Gypsum Wallboard Product Folder.*

7. *The 1½" USG Drywall Screw Type G is not recommended for use in temporary fastening of two-ply 3/8" or ½" SHEETROCK or BAXBORD* double wall. In these assemblies scaffold nails driven through gypsum blocks at third points vertically, or temporary shoring should be used.*

The most expedient way to obtain information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill. 60606.

general conditions

In cold weather and during the period of wallboard application and joint finishing, temperatures within the building shall be maintained uniformly within the range of 55° to 70°F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

*Reg. U.S. Pat. Off.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

materials

See USG product folders in this series:

Joint Treatment Folder for Joint Treatment Specifications.

Paint Products Folder for Paint Specifications.

Gypsum Wallboard Folder for information on Wallboard System Components.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. Faceboards—48″ wide—(⅜″) (½″) (⅝″) thick Tapered Edge SHEETROCK; (½″) (⅝″) thick SHEETROCK FIRECODE*; ⅜″ thick ULTRAWALL* panels (finish); ½″ thick SHEETROCK Vinyl panels (finish)—lengths as required.

b. Backing Board—48″ wide—(⅜″) (½″) (⅝″) thick (Tapered Edge) (Insulating) SHEETROCK; (½″) (⅝″) thick SHEETROCK FIRECODE; (⅜″) (½″) (⅝″) thick BAXBORD* Gypsum Backing Board; (½″) (⅝″) thick BAXBORD FIRECODE, ½″ thick USG Wood Fiber Sound Deadening Board—lengths as required.

c. 48″ wide, (½″) (⅝″) thick SHEETROCK W/R Gypsum Wallboard—as required (for bathrooms, other high moisture areas).

d. Joint Treatment—PERF-A-TAPE or DURABOND Joint System.

e. Laminating Adhesive—USG Laminating Adhesive or PERF-A-TAPE Joint Compound (embedding type).

f. Fasteners

—Screws—1¼″ USG Drywall Screw—Type W.
—Nails (specify type from Pg. 2—not available from U.S.G. except USG matching color nails).

—Staples—16 ga. flat galvanized wire, ½″ wide, (1″) (1⅛″) (1¼″) long with divergent points (not available from U.S.G.).

g. USG Metal Trim (specify type from Pg. 2).

h. SHEETROCK Metal Moldings (for ULTRAWALL and SHEETROCK Vinyl Panels)—to match specified finishes as required.

i. USG Corner Bead—DUR-A-BEAD*, PERF-A-BEAD*, ECONO Corner Reinforcement (specify type from Pg. 2).

j. THERMAFIBER* Insulating Wool Blankets (thickness).

k. Wallboard Sealant (for SHEETROCK W/R Wallboard)—SHEETROCK Brand W/R Sealant.

l. Caulking—Presstite 579.64 Mastic as manufactured by Presstite Division of Interchemical Corporation or equal.

base layer erection (gypsum wallboard)

Ceilings—Base layer gypsum wallboard shall be applied with long edges perpendicular to framing members. End joints may occur on or between framing members, and shall be positioned to offset face layer joints by at least 10″.

Walls—Base layer gypsum wallboard shall be applied with long edges parallel to and centered on framing members. Wallboard shall be attached to framing supports by: (screw) (nail) (staple) attachment, as follows:

Screw attachment—The base layer shall be screw-applied to framing members with power-driven USG 1¼″ drywall screws —Type W spaced not to exceed 12″ o.c. for walls and ceilings. For walls with studs 16″ o.c., screws may be applied not to exceed 16″ o.c.

Nail attachment—The base layer shall be nailed to framing members with the recommended nails for the wallboard thickness and type used, spaced 7″ on ceilings and 8″ on walls (spaced 12″ if double nailing used). The nailheads shall be driven flush with surface of board.

Staple attachment—The base layer shall be attached to framing members with power-driven staples of type above specified, spaced 7″ on ceilings and 8″ on walls.

Screws shall be staggered on adjoining edges or ends. Nails shall not be staggered on adjoining edges or ends. While the fasteners are being driven, the wallboard shall be held in firm contact with the underlying support. Attachment should proceed from the central portion of the wallboard toward ends and edges.

base layer erection (wood fiber sound deadening board)

The base layer of wood fiber sound deadening board shall be applied vertically with joints staggered on opposite sides of the partition. Board shall be fastened to wood studs on each side of the partition with 6d cement coated gypsum wallboard nails spaced 12″ o.c. along the vertical edges and 30″ o.c. along the intermediate framing.

face layer erection (treated joints)

Gypsum wallboard of maximum practical lengths shall be used in order to minimize end joints. Boards shall be loosely butted and neatly fitted at joints. All joints in face layer shall fall at least 10″ from parallel joints in base layer.

When necessary to cut ends, edges, scribe or make cutouts within the field of the wallboard, it shall be done in a workmanlike manner.

After face layer panels have been cut to size, adhesive shall be mixed, applied and boards laminated in place according to the manufacturer's directions and in the following manner:

Sheet lamination—PERF-A-TAPE Joint Compound (embedding type) or USG Laminating Adhesive shall be mixed according to manufacturer's directions and applied to the entire back surface of face boards and to the extreme edges of the board. Adhesive shall be applied in beads approximately ⅜″ wide at the base and ½″ high and spaced 4½″ o.c. Face boards shall then be laminated to base layer boards using moderate pressure and (temporary nailing) (temporary supports) (USG Drywall Screws) as follows:

1. Temporary nailing with nails that have at least ¾″ penetration into the framing shall be used to provide support for the face layer every 16″ to 24″ and insure adequate bond. When proper bond is developed between the two layers, nails shall be removed and nail holes properly dimpled before applying joint treatment.

2. Temporary supports consisting of bracing or shoring shall be used to provide support for the face layer every 16″ to 24″ and insure adequate bond. When proper bond is developed supports shall be removed.

3. USG Drywall Screws shall be used to permanently attach face boards to base layer boards. 1½″ USG Drywall Screws Type G shall be placed along the vertical edges spaced 36″ o.c. maximum, within 2′ of joint and 12″ of both ends. Screws in the field of the board at the centerline of the panel shall occur 18″ o.c. maximum and within 24″ of both ends.

Strip lamination—USG Laminating Adhesive or PERF-A-TAPE Joint Compound (embedding type) shall be mixed according to manufacturer's directions and applied to base layer boards in strips, 2′ o.c. running continuously from floor to ceiling. Each adhesive strip shall consist of four beads ½″ high and ⅜″ wide at the base and spaced 1½″ to 2″ o.c. Face layer boards shall then be laminated to base layer boards

*Reg. U.S. Pat. Off.

using moderate pressure and 1½″ USG Drywall Screws Type G placed to penetrate the adhesive strips. Screws along vertical edges shall occur 36″ o.c. maximum, within 2″ of joint and 12″ of both ends. Screws in the field of the board at the centerline of the panel shall occur 48″ o.c. maximum and within 24″ of both ends.

face layer erection over wood fiber sound deadening board

(*Specify first two paragraphs from Face Layer Erection—Treated Joints section, above.*)

After face layer panels have been cut to size, the ⅝″ SHEETROCK FIRECODE face panels shall be applied horizontally. Face layer shall be fastened with 7d cement coated nails spaced 7″ o.c. and staggered from nails in wood fiber sound deadening board.

face layer erection (predecorated ULTRAWALL or SHEETROCK Vinyl panels)

Panels shall be applied vertically according to manufacturer's directions. Any less than full width panels used shall be positioned with cut edge at corner. Boards shall be loosely butted and neatly fitted at joints. All joints in face layer shall fall at least 10″ from parallel joints in base layer.

(*Specify laminating procedure from Face Layer Erection—Treated Joints section, above.*)

When nail application is used for ULTRAWALL panels, 1⅞″ USG color-matched steel nails shall be driven with plastic-headed hammer at 8″ o.c. spacing through base layer into all studs.

(*Optional*) Panels shall be finished with SHEETROCK Aluminum Moldings matching specified finishes of ULTRAWALL or SHEETROCK Vinyl panels, according to manufacturer's directions.

SHEETROCK W/R wallboard erection

(*Follow specifications in USG Gypsum Wallboard Product Folder.*)

fastening for "floating corner" construction

At inside corners, only the overlapping panel of the base layer board shall be nailed to the corner framing, thus securing both boards into the corner without nailing of the face layer.

At outside corners, only the face layer board, not the base layer, shall be nailed to the corner framing. When nail-on corner reinforcement is to be applied, either temporary nailing of the face layer shall be used or the permanent nails shall be driven to penetrate the framing approximately ¾″ and shall be countersunk or concealed by the corner reinforcement.

fastening for "floating interior angle" construction

(*Follow specifications in USG Systems Folder—SHEETROCK/1-layer & Wood Framing for base layer.*)

board erection for radiant heated ceilings

Notes to architect

In radiant heated ceiling in which the heating elements are located between two layers of SHEETROCK gypsum wallboard, certain precautions are necessary in order to minimize the possibility of defects developing after installation. Among these are cracking due to thermal shock, shadowing due to unequal initial drying rates, and calcination of gypsum wallboard due to overheating (see Limitations, Page 5). The following partial specifications must be supplemented and adapted to conform to the heating engineer's design.

Fasteners—The base layer of gypsum board shall be applied horizontally direct to framing members. **Screws:** shall be spaced 24″ o.c. for base layer. **Nails:** shall be spaced 7″ for base layer and 16″ o.c. for face layer. Alternate: Where filler is not used as an adhesive, space base layer nails 14″ o.c.; face layer nails 7″ o.c. Nails to be used shall be (base layer) 1¼″ GWB-54 for ⅜″ and ½″ thick board, 1⅜″ GWB-54 for ⅝″ thick board; (face layer) GWB-54 or coated nails providing ¾″ and 1″ penetration, respectively. Nails shall be driven flush with surface in base layer; heads shall be slightly recessed and dimpled in face layer and shall remain in place for conventional finishing with joint treatment. **Staples:** may be used in the base layer only and shall be spaced 7″ and be driven at no less than ⅜″ from ends and edges of gypsum wallboard. Staples to be used shall be 16 ga. flat galvanized wire, 7/16″ wide crown, 1″ long legs for ⅜″ thick board, 1⅛″ legs for ½″ board, 1¼″ legs for ⅝″ thick board, all with divergent points. Staples shall be driven with crown at right angles to long dimension of framing member, except where paper bound edges fall on framing members; then staples shall be driven parallel to edges. Staples shall be driven in such a manner that crown bears tightly against wallboard, but does not cut into face paper.

Radiant electric cable systems—Base layer of SHEETROCK wallboard shall be horizontally applied to joists, and electric heating cables shall be securely attached to wallboard and spaced in accordance with cable manufacturer's recommendations. Cables shall be positioned parallel to and between nailing members, so that at least a 2½″ unobstructed channel is provided under each nailing member. Cables shall cross nailing members only near edges of ceiling, within a 4″ to 6″ area from wall. A space of at least 4″ shall be left around perimeter of each ceiling, and of at least 8″ around all openings, which is completely clear of cable.

All inspections and testing of the electrical heating system shall be completed before application of face layer of gypsum wallboard. Filler shall be DURABOND Joint Compound and ASTM C-35 sand mixed in the proportion of 1:1 by weight. Heating elements shall be completely embedded in a filler leveled to provide complete contact between face layer and base layer of wallboard. (Where filler serves as adhesive to hold face layer, nail spacing may be 7″ o.c. for base layer and 16″ o.c. for face layer.) (If necessary, furring strips of same thickness as layer of filler may be attached over base layer parallel to joists.) Face layer shall be erected immediately after filler has been spread. Where base layer is supported by furring strips attached to wood beams, trusses or joists spaced over 24″ o.c. the DURABOND filler or fill coat shall be applied and allowed to dry completely. A thin adhesive coat of DURABOND Joint Compound shall be applied and the face layer erected and fastened with nails 7″ o.c. Face layer nails shall be spaced 8″ to 10″ away from walls at all ceiling perimeters. Minimum of one week with good drying conditions, and two weeks in cold season, shall be allowed after completion before system is operated.

wallboard accessories

a. (PERF-A-TAPE) (DURABOND) Joint System shall be used on all face board joints and internal angles formed by the intersections of walls and ceilings (specify from USG Joint Treatment Product Folder).

b. Metal Corner Bead No. (000000) shall be securely installed at all external corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. At least two coats of joint compound shall be applied over beads and each coat feathered out onto panel faces.

c. Metal Trim No. (000000) shall be securely installed where indicated. Finish with PERF-A-TAPE Joint Compound, as required.

d. Fasteners shall be as shown on drawings or as herein specified. Fasteners shall be driven at least ⅜″ from ends or edges of wallboard to provide uniform dimple not over 1/32″ deep. Spot exposed fastener dimples on face layers with at least three coats of joint compound, feathered and sanded smooth.

e. Control Joints shall be provided as indicated and shall consist of two pieces of Metal Trim back to back.

*TRADEMARKS: The following trademarks are owned and/or registered in the U.S. Patent Office by United States Gypsum Company, and are used throughout this catalog to designate particular products manufactured by that company: SHEETROCK (gypsum wallboard, mouldings, adhesives); FIRECODE, ULTRAWALL, BAXBORD (gypsum board); USG (wood fiber board, metal products, adhesives); PERF-A-TAPE, DURABOND (joint treatment); THERMAFIBER (insulating wool); DUR-A-BEAD, PERF-A-BEAD, PERF-A-TRIM (corner reinforcement).

NOTE: Since methods and conditions of application and use are beyond our control, the United States Gypsum Company will not be responsible for failure of its products when not used according to our directions and specifications.

a-1396

UNITED STATES GYPSUM

resilient attachment

partitions **a**

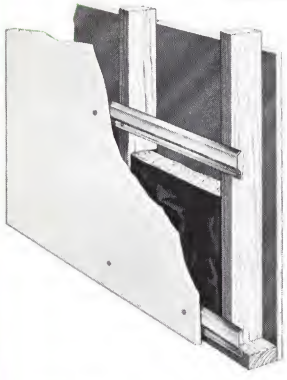
SHEETROCK* & RC-1/Wood Framing

GYPSUM WALLBOARD

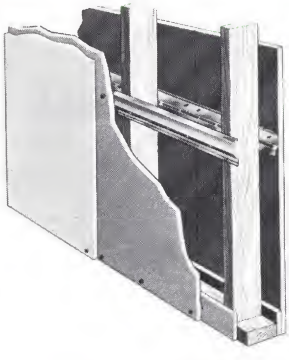
1406

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
1 hr. est	Wd Stud—Resil SHEETROCK gypsum wallbd 2 layers one side & 1 layer opp side—2x4 16″ o.c.—RC-1 chan both sides spaced horiz 24″ o.c.—1 layer ⅝″ wallbd screw att one side—opp side base layer of ⅝″ wallbd screw att & face layer of ½″ wallbd lamin—joints fin—perimeter caulked wt 8.7 width 6½″	TL-61-10 (s)	48		146		a-1406
1 hr. est	Wd Stud—Resil ⅝″ SHEETROCK FIRECODE gypsum wallbd—2x4 16″ o.c.—3″ THERMAFIBER ins wool blkts—RC-1 chan one side spaced 24″ o.c.—wallbd att with 1″ Type S screws—opp side direct att with 1¼″ Type W screws—joints fin wt 7 width 5⅜″	USG-33-FT-G&H (s)	52		134	Best value of wood stud drywall party walls	a-1406
1 hr.	Wd Stud—Resil ⅝″ SHEETROCK FIRECODE gypsum wallbd—2x4 16″ o.c.—RC-1 chan both sides spaced horiz 24″ o.c. att with 6d nails—wallbd att with 1″ Type S screws—joints fin wt 7 width 5⅞″	T-1396-OSU (f) TL-60-52 (s)	45		127	Fully resilient 1-hr. fire rated party wall	a-1406
ceiling applications							
1 hr.	Resil ⅝″ SHEETROCK FIRECODE gypsum wallbd ceiling—1″ nom sub & fin flr—2x10 wd joist 16″ o.c.—RC-1 chan spaced 24″ o.c.—wallbd att with 1″ & 1⅝″ Type S screws—joints fin clg wt 3	UL Des 25-1 hr (f) NBS-717 (s)	45		clg matls 36	Sound test based on 2x8 16″ o.c.	a-1406
1 hr.	Resil ½″ SHEETROCK FIRECODE "C" gypsum wallbd ceiling—1¼″ nom wd sub & fin flr—2x10 wd joist 16″ o.c.—RC-1 chan spaced 24″ o.c.—wallbd att with 1″ Type S screws—joints fin clg wt 3	UL Des 41-1 hr (f)	N/A		clg matls 33		a-1406
1 hr. est	Resil SHEETROCK gypsum wallbd ceiling—1¼″ nom wd sub & fin flr—2x10 wd joist 16″ o.c.—RC-1 chan screw att to joist—wallbd att with 1″ Type S screws—joints fin clg wt 3	CK-6512-6 (s) (½″ FIRECODE "C") CK-6412-10 (s) (⅝″ reg SHEETROCK)	47 47	(INR) −12 −12	clg matls 33 34		a-1406
1 hr. est	Resil SHEETROCK gypsum wallbd ceiling—1¼″ nom wd sub & fin flr—44-oz carpet & 40-oz pad atop flr—2x10 wd joist 16″ o.c.—RC-1 chan screw att to joists—wallbd att with 1″ Type S screws—joints fin clg wt 3	CK-6512-7 (s) (½″ FIRECODE "C") CK-6412-9 (s) (⅝″ reg SHEETROCK)	46 47	(INR) +16 +15	clg matls 33 34		a-1406
1 hr. est	Resil SHEETROCK gypsum wallbd ceiling—1¼″ nom wd sub & fin flr—2x10 wd joist 16″ o.c.—3″ THERMAFIBER ins wool blkts betw joists—RC-1 chan screw att to joists—wallbd att with 1″ Type S screws—joints fin clg wt 3	CK-6512-9 (s) (½″ FIRECODE "C") CK-6412-3 (s) (⅝″ reg SHEETROCK)	50 49	(INR) −5 −5	clg matls 45 46		a-1406
1 hr. est	Resil SHEETROCK gypsum wallbd ceiling—1¼″ nom wd sub & fin flr—44-oz carpet & 40-oz pad atop flr—2x10 wd joist 16″ o.c.—3″ THERMAFIBER ins wool blkts betw joists—RC-1 chan screw att to joists—wallbd att with 1″ Type S screws—joints fin clg wt 3	CK-6512-8 (s) (½″ FIRECODE "C") CK-6412-4 (s) (⅝″ reg SHEETROCK)	50 50	(INR) +20 +19	clg matls 45 46		a-1406
wall furring application							
—	RC-1 Furring Channels 24″ o.c., ½″ Insulating SHEETROCK screw attached, PERF-A-TAPE Joint Treatment	—	—	—	101	RC-1 channel reduces transfer of structural stresses to surface membrane	a-1406

resilient partition

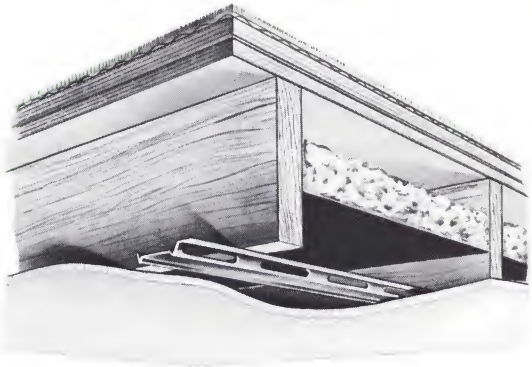


resilient channel one side with wool



resilient channel both sides

resilient floor/ceiling



resilient channel with wool

*Reg. U.S. Pat. Off.

description/utility

description

This lightweight drywall construction provides superior sound transmission loss in partitions and ceilings finished with SHEETROCK Gypsum Wallboard. In these assemblies SHEETROCK face layers are attached with RC-1 SHEETROCK Resilient Channels to either wood stud partition framing, wood ceiling joists or wood trussed rafters. These channels, roll formed from 25 ga. electro-galvanized steel, are ingeniously designed to improve sound control at an economical cost. They are attached 24″ o.c. at right angles to the framing with screws or nails.

SHEETROCK wallboard is fastened to the resilient channels with power-driven USG® Drywall Screws Type S spaced 16″ o.c. for walls and 12″ o.c. for ceilings. These specially designed self-tapping steel screws with a rust-inhibitive coating provide superior holding power, optimum surface depression and reduced core fracturing. The construction when completed with the PERF-A-TAPE* or DURABOND* Joint System and DUR-A-BEAD* Corner Reinforcement offers 1-hour fire protection for wood framing and very good sound transmission loss (see table, page 1).

SHEETROCK for these assemblies is available in ½″ or ⅝″ thickness and in five types. SHEETROCK FIRECODE wallboards generally obtain higher fire resistance ratings than regular SHEETROCK. With Insulating (foil back) SHEETROCK wallboard, the system is effective as a vapor barrier, offers significant insulating value and provides economical, crack-resistant furring for exterior walls.

Partitions—One of the best values in wood stud party walls consists of single-layer ⅝″ SHEETROCK FIRECODE* Gypsum Wallboard, resiliently attached to one side of wood studs and directly attached to the other side, plus 3″ THERMAFIBER* Insulating Wool Blankets pressed tightly into the stud cavity. This lightweight partition has been widely used for its high sound value, STC 52, at costs which are little more than conventional partition systems.

RC-1 SHEETROCK Resilient Channels may be applied to both sides of wood studs 16″ o.c. with single layer ⅝″ SHEETROCK FIRECODE face panels. This party wall construction, offering a high sound rating and 1-hour fire resistance, has been repeatedly chosen for use between units in garden apartments and other multi-family buildings.

For greater strength and fire resistance, double-layer wallboard construction for partitions may be used with or without RC-1 channels (see table, page 1, and separate USG Systems Folder on SHEETROCK/Wood Framing 2-layer construction).

Ceilings—Floor and ceiling constructions using 2x10 wood joists spaced up to 16″ o.c. and resiliently attached wallboard provide 1-hour fire resistance, excellent sound attenuation values and high impact noise resistance (see table, page 1 for construction details). These assemblies are particularly suited for motels and multi-story apartment units which demand high sound and fire resistance.

In these constructions the RC-1 Resilient Channels are attached 24″ o.c. at right angles to the wood joists with 1¼″ USG Drywall Screws Type W. SHEETROCK Wallboard is screw-attached to the channels with 1″ USG Drywall Screws Type S.

A 1-hour fire resistance rating has been obtained by using either ½″ SHEETROCK FIRECODE "C" wallboard or ⅝″ SHEETROCK FIRECODE panels. Along with the RC-1 channels, the addition of 3″ THERMAFIBER Insulating Wool Blankets stapled between the joists greatly improves the sound attenuation values. With the addition of 44 oz. carpet and 40 oz. pad atop the floor, the impact noise resistance (INR) is appreciably improved.

function and utility

Fire Resistance—The 1-hour fire resistance ratings offered by these assemblies meet the fire resistance requirements established by ASTM E-119 for walls and floor-ceiling construction.

Sound Control—The resilient application of SHEETROCK wallboard with the RC-1 Resilient Channel offers a significant improvement in sound transmission loss over the direct application of wallboard.

Versatility—These assemblies are suitable for use in remodeling or in all types of new construction where wood framing is used.

Economy—Only three basic components are required for both walls and ceilings: the resilient channel, drywall screws, and gypsum wallboard. These simple components erect quickly to provide economical construction.

limitations

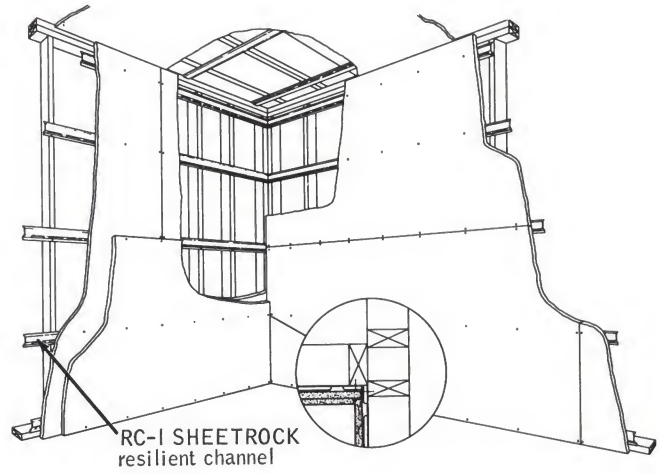
1. 1″ USG Drywall Screws Type S must be used for attachment of single layer wallboard to RC-1 Resilient Channels.

2. RC-1 Resilient Channels must be attached to the bottom face of wood floor joists only with 1¼″ USG Drywall Screws Type W. Nails should not be used.

3. Resilient ceilings should not be installed beneath highly flexible floor joists. Install only to framing meeting "Wood Framing Requirements" shown in USG Gypsum Wallboard Product Folder.

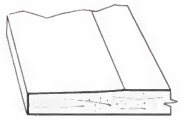
sound attenuation factors

test no.	method	decibel frequency in cps											STC
		125	175	250	350	500	700	1000	1400	2000	2800	4000	
USG-33-FT-G&H	Lab	32	36	42	46	52	54	58	55	53	53	54	52
TL-60-52	Lab	29.5	32.5	39.5	43.5	46	48	50	51	49	44	49	45



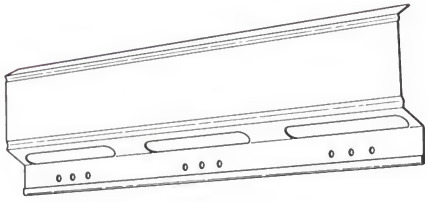
*Reg. U.S. Pat. Off.

components



tapered edge
SHEETROCK gypsum wallboard

RC-1
SHEETROCK
resilient
channel

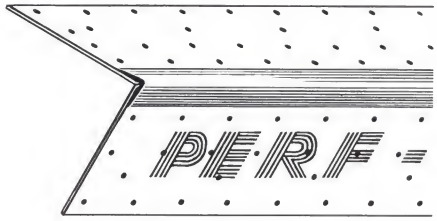


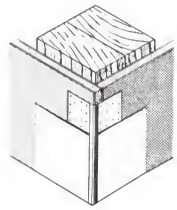
see "gypsum wallboard and joint treatment" product catalogs for full description on accessories & sizes

1-1/4" USG drywall screw—type W—bugle head

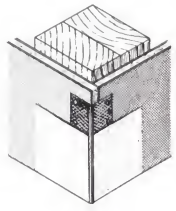
1" USG drywall screw—type S—bugle head

1-5/8" USG drywall screw—type S—bugle head

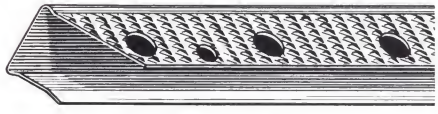




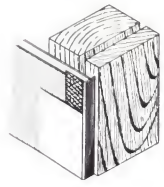
no. 100 PERF-A-BEAD*



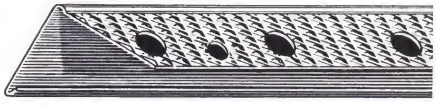
DUR-A-BEAD corner reinforcement

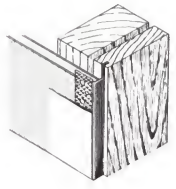


no. 200-A USG metal trim

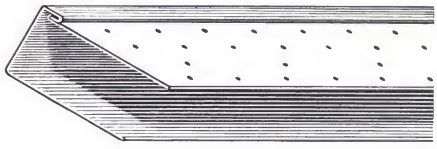


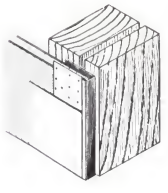
no. 200-B USG metal trim



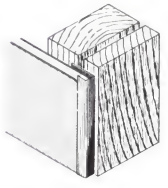


no. 200-C USG metal trim





PERF-A-TRIM*



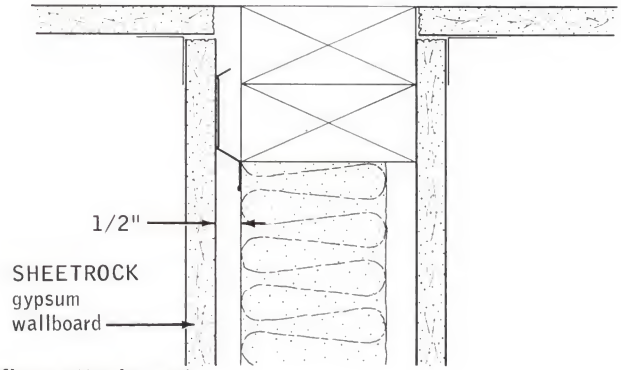
USG metal trim

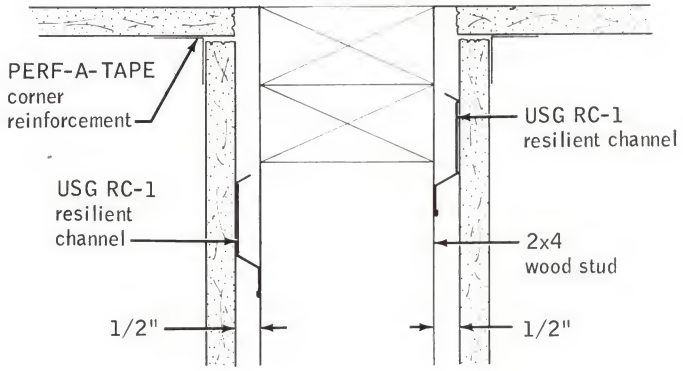
*Reg. U.S. Pat. Off.

details / partitions

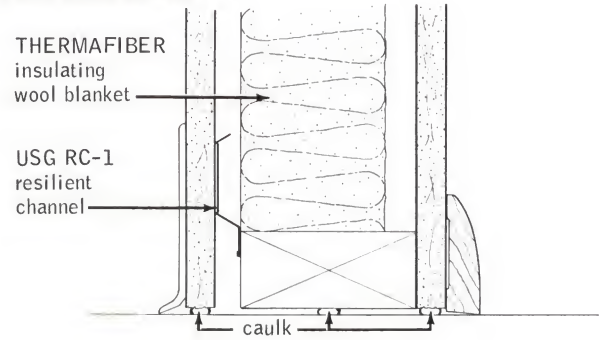
scale: 3″ = 1′-0″

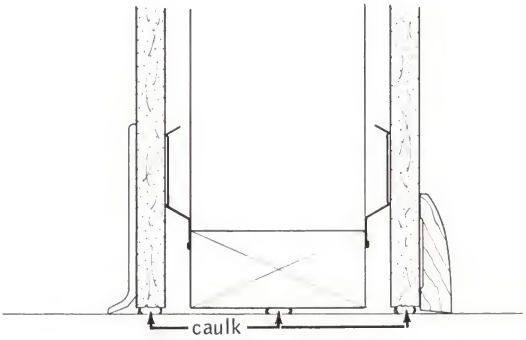
ceiling attachment

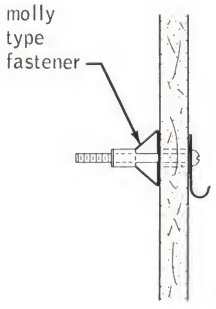




floor attachment



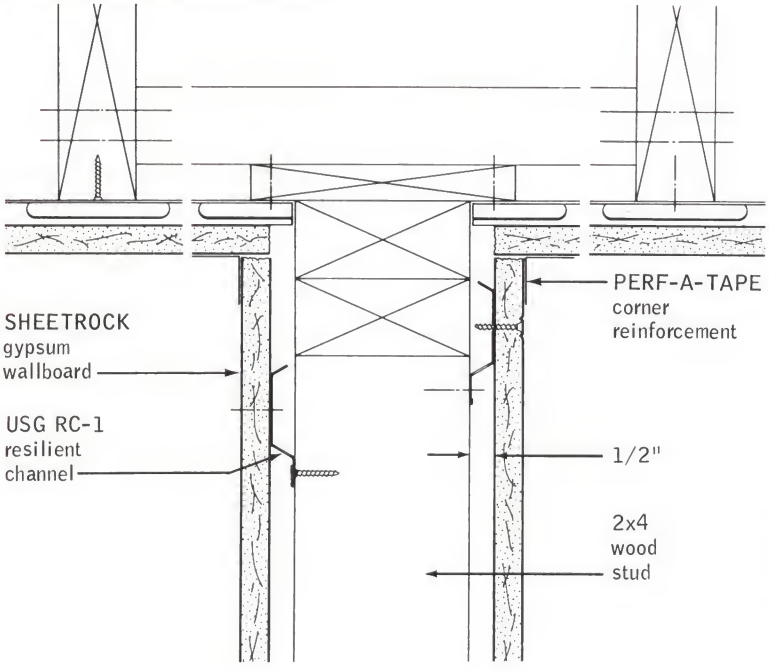




light fixture attachment

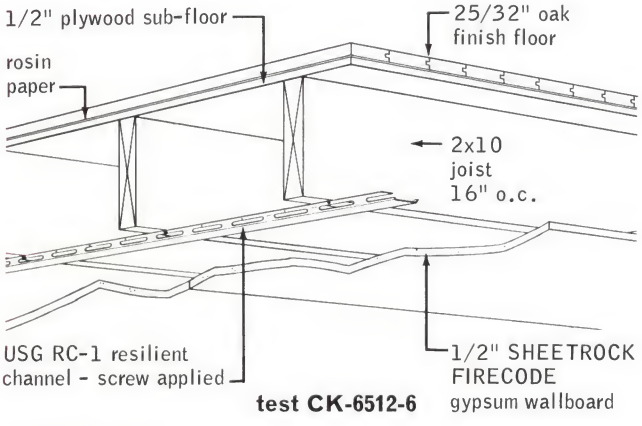
details/ceilings

resilient ceiling attachment

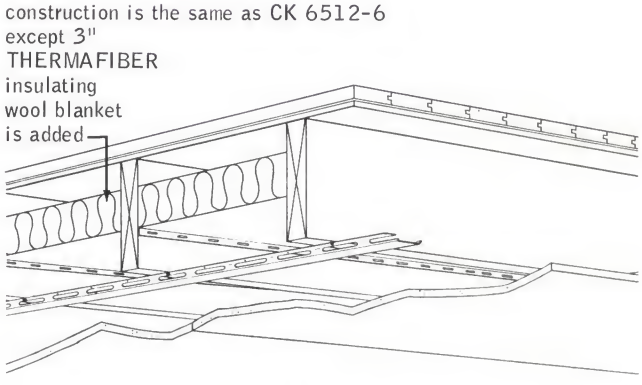


typical ceiling application

ceiling & floor assemblies



test CK-6512-6



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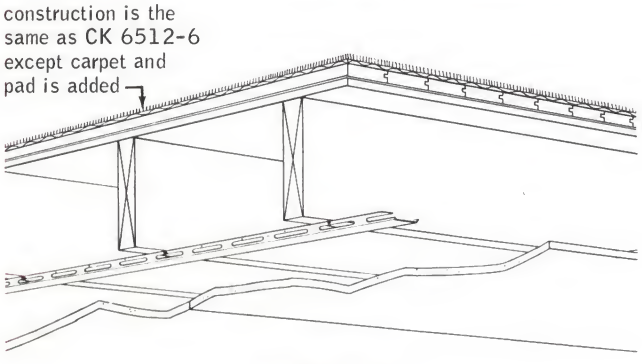

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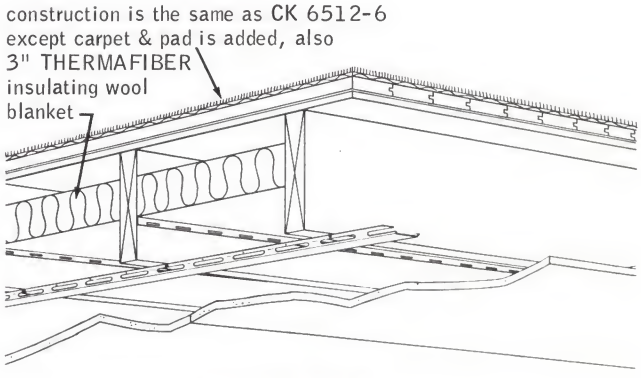


test CK-6512-8

*Reg. U.S. Pat. Off.

specifications

notes to architect

1. *Drywall partitions and ceilings will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that wallboard surfaces be isolated from all structural elements by control joints or other means where:*

a. *A partition or ceiling abuts any structural element or dissimilar wall or ceiling assembly.*

b. *The construction changes within the plane of the partition or ceiling.*

In long partition runs, control joints should be provided no more than 30′ o.c. Door frames extending from floor to ceiling are recommended as control joints. For doors less than ceiling height, control joints extending from both corners of the frame to the ceiling may be used.

Expansive ceiling areas should have control joints spaced not to exceed 50′ in either direction. The continuity of wallboard and supports should be broken over control joints. Control joints may be positioned to intersect light fixtures, heating vents, air diffusers, etc., which are usually considered weak spots.

2. *Holes cut in a thin wallboard membrane such as door frames, borrowed lights, etc., cause a concentration of stresses in the wallboard. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

3. *Ceramic Tile—SHEETROCK W/R Gypsum Wallboard is recommended as a base for the adhesive application of ceramic, metal and plastic tile (see USG Gypsum Wallboard Product Folder).*

4. *Where this partition is used as a sound barrier, the use of non-hardening caulking material to seal cut-outs, such as at electrical fixtures and to seal all intersections with the adjoining structure, is recommended. Eliminate cutting holes back to back and adjacent to each other. Door and borrowed light openings are not recommended when this partition is used as a party wall.*

5. *The addition of THERMAFIBER Insulation Blankets in the stud cavity, pressed tightly in place, stapled to the back side of one face of the partition or between joists will increase the sound transmission loss of the construction.*

6. *Where contact or furred ceilings occur under roof construction, the plenum or attic space should be vented according to recommended engineering practice.*

7. *For wood framing requirements, heating and ventilating recommendations, see USG Gypsum Wallboard Product Folder.*

8. *With fire rated construction, all vertical butt joints should be back blocked. Back blocking end joints is recommended to minimize joint ridging or deformation at the panel joints that may occur in gypsum board construction under adverse job or weather conditions. Where back blocking is used, float the end joints between resilient channels and back block with minimum 8″ wide strip of ⅜″ gypsum board the full length of the joint adhesively applied over abutting ends. See separate USG system folder on SHEETROCK 1-layer & Wood Framing for details.*

9. *Fixture Attachment—Lightweight fixtures and trim should be installed using plastic plugs or other expandable anchors for screw attachment. Medium and heavy weight fixtures are not recommended on resilient surfaces but if required they should be supported from the primary framing.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

general conditions

In cold weather and during the period of wallboard application and joint finishing, temperatures within the building shall be maintained uniformly within the range of 55° to 70° F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

materials

See USG product folders in this series:

Gypsum Wallboard Folder for information on Wallboard System Components.

Joint Treatment Folder for Joint Treatment Specifications.

Paints Product Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company.

a. Gypsum Board—48″ wide—(½″) (⅝″) thick Tapered Edge SHEETROCK (Regular) or (Insulating—foil back); (½″) (⅝″) thick SHEETROCK FIRECODE; ½″ thick FIRECODE "C"; (½″) (⅝″) thick SHEETROCK W/R Wallboard—lengths as required.

b. Joint Treatment—PERF-A-TAPE or DURABOND Joint System.

c. Adhesive—(for Back-Blocking System)—PERF-A-TAPE Joint Compound (embedding type).

d. Fasteners—Screws (specify from Pg. 3).

e. USG Metal Trim (specify type from Pg. 3).

f. Resilient Channels—RC-1 SHEETROCK Resilient Channel.

g. USG Corner Bead—DUR-A-BEAD, PERF-A-BEAD, ECONO* Corner Reinforcement (specify type from Pg. 3).

resilient channel erection (partitions and ceilings)

RC-1 SHEETROCK Resilient Channels shall be positioned at right angles to the wood framing, spaced 24″ o.c. and attached to the supports with 1¼″ USG Drywall Screws Type W driven through the punch holes provided in the attachment flange. On walls, resilient channels shall be positioned with the wallboard attachment flange up and shall be located 24″ up from the floor line, a maximum of 6″ down from the ceiling line, and extended into all corners and connected to the corner framing. Channels shall not be cantilevered more than 6″. When required, the resilient channel shall be spliced directly over the support by nesting the channel and attaching both flanges to the support.

resilient channel erection (wall furring)

RC-1 SHEETROCK Resilient Channels shall be positioned horizontally and attached with 2″ cut nails in mortar joints of brick, clay tile or concrete block or in the field of lightweight aggregate block; ⅝″ concrete stub nails or power-driven fasteners in monolithic concrete. Fasteners shall be spaced 24″ o.c. Position channels within 4″ of floor and ceiling line and not more than 24″ o.c.

*Reg. U.S. Pat. Off.

panel erection

a. ceilings—SHEETROCK Wallboard shall be applied first to the ceiling and then to the partitions. Gypsum board of maximum practical length shall be applied with the long dimension at right angles to the resilient channel and fastened with 1″ USG Drywall Screws Type S spaced 12″ o.c. in the field of the board and along abutting ends. End joints shall be staggered and neatly and accurately fitted. End joints shall occur over the web surface of the resilient channel or occur midway between channels with the joint floated and back blocked. Gypsum board shall be properly supported around all cut-outs and openings in the ceiling.

b. partitions—Gypsum board of maximum practical length shall be applied with the long dimension parallel to the resilient channel and fastened with 1″ USG Drywall Screws Type S spaced 12″ o.c. along the channels. The horizontal abutting edges shall be centered over the screw flange of the channel.

For two-layer application of gypsum board, base layer shall be attached to the resilient channels with 1″ USG Drywall Screws Type S spaced 16″ o.c. Face layer shall be erected with the long dimension at right angles to the long edges of the base layer and fastened with 1⅝″ USG Drywall Screws Type S spaced 16″ o.c.

wall furring panel application

½″ Insulating SHEETROCK Wallboard of maximum practical length shall be applied with the long dimension parallel to the resilient channels with 1″ USG Drywall Screws Type S spaced 12″ o.c. The horizontal abutting edges shall be centered over the screw flange of the channel. Where there is a possibility of water penetration through the walls, an asphalt felt protection strip shall be installed between the resilient channels and the wall.

wallboard accessories

a. (PERF-A-TAPE) (DURABOND) Joint System shall be used on all face board joints and internal angles formed by the intersections of walls and ceilings (specify from USG Joint Treatment Product Folder).

b. Metal Corner Bead No. (000000) shall be securely installed at all external corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. At least two coats of joint compound shall be applied over beads and each coat feathered out onto panel faces.

c. Metal Trim No. (000000) shall be securely installed where indicated. Finish with PERF-A-TAPE Joint Compound, as required.

d. Fasteners shall be as shown on drawings or as herein specified. Fasteners shall be driven at least ⅜″ from ends or edges of wallboard to provide uniform dimple not over 1/32″ deep. Spot exposed fastener dimples on face layers with at least three coats of joint compound, feathered and sanded smooth.

e. Control Joints shall be provided as indicated and shall consist of two pieces of Metal Trim back to back.

*Reg. U.S. Pat. Off.

*TRADEMARKS: The following trademarks are owned and/or registered in the U.S. Patent Office by United States Gypsum Company, and are used throughout this catalog to designate particular products manufactured by that company: SHEETROCK (gypsum wallboard, metal channel); FIRECODE (gypsum wallboard); USG (metal products); THERMAFIBER (insulating wool); PERF-A-TAPE, DURABOND (joint treatment); DUR-A-BEAD, PERF-A-BEAD, PERF-A-TRIM, ECONO (corner reinforcement).

NOTE: Since methods and conditions of application and use are beyond our control, the United States Gypsum Company will not be responsible for failure of its products when not used according to our directions and specifications.

UNITED STATES GYPSUM

BRACE-TITE Lathing System*

ceilings

b

ROCKLATH* Plaster Base & Plaster

1466

A.I.A. File No. 20-B-2

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
4 hrs.	ROCKLATH PI Base & Plaster—¾" cr chan 12" o.c. & BRACE-TITE Clips—⅜" perf gypsum lath—1" 100:2-100:3 gypsum perlite plaster—1" 20-ga hex mesh—2" conc on riblath over bar joist clg wt 7	GA-NBS-311 (f)	N/A		clg matls 120		b-1466
3 hrs.	ROCKLATH PI Base & Plaster—¾" cr chan 12" o.c. & BRACE-TITE Clips—⅜" perf gypsum lath—14-ga diag wire reinf—5/16" 100:2½ gypsum perlite plaster—2½" conc over cellular stl flr clg wt 5	GA-NBS-337 (f)	N/A		clg matls 115	Good crack resistance with an opportunity to reinforce plaster at re-entry angle	b-1466
2 hrs.	ROCKLATH PI Base & Plaster—¾" cr chan 12" o.c. & BRACE-TITE Clips—⅜" perf gypsum lath—14-ga diag wire reinf—⅝" 100:2-100:3 gypsum sand plaster—2" conc over bar joist clg wt 7	GA-NBS-345 (f)	N/A		clg matls 106	Good crack resistance with an opportunity to reinforce plaster at re-entry angle	b-1466
1 hr.	ROCKLATH PI Base & Plaster—¾" cr chan 16" o.c.—⅜" perf gypsum lath—⅝" STRUCTO-LITE plaster—2½" conc on riblath over bar joist clg wt 5	NBS 261 (f)		45 db est	clg matls 104	Attenuation test—good crack resistance, can reinforce plaster at re-entry angle	b-1466
N/A	ROCKLATH PI Base & Plaster—¾" cr chan & BRACE-TITE Clips—⅜" gypsum lath—½" 100:2-100-2½ gypsum sand plaster clg wt 6	USG-6-FT-G&H (s)		47 db	clg matls 103	Attenuation test—suspension & ceiling membrane only	b-1466

description

This ceiling assembly consists of ROCKLATH Plaster Base attached to conventional furred or suspended ceiling grillage with the BRACE-TITE Lathing System. In this system special wire clips are attached to the ¾" furring channel and provide sag-resistant, spring-tension support across the full lath width.

ROCKLATH, a gypsum core faced on both sides with special paper, forms a rigid base for the economical application of gypsum plasters. For this assembly, ROCKLATH is ⅜" thick and depending upon ceiling design requirements is available in three types: Plain, for most ceiling installations; Insulating (foil back), where insulation and vapor barrier are required; Perforated, where fire ratings are needed. In Perforated ROCKLATH, ¾" round holes are punched through the lath 4" o.c. in each direction, providing a mechanical key in addition to the natural plaster bond. Fire resistance ratings up to 4 hours can be obtained using this system (see table above).

function and utility

BRACE-TITE ceilings serve to conceal and protect structural and mechanical elements with a lightweight fireproof membrane of gypsum lath and plaster that is easily decorated and maintained. In addition the BRACE-TITE Lathing System for attaching ROCKLATH offers:

Crack Resistance—The BRACE-TITE clips while supporting the plaster base firmly against the channels, isolate the plaster membrane from minor movements of the grillage.

Fire Resistance—Incombustible components make possible established fire-resistance ratings of 1 to 4 hours.

Insulation and Vapor Barrier—Insulating (foil back) ROCKLATH provides an effective vapor barrier and increases the overall "U" factor of the roof-ceiling assembly.

Economy—With ROCKLATH Plaster Base the scratch coat of plaster and labor of application may be saved. The established fire resistance ratings can reduce annual insurance premiums.

limitations

1. A non-load bearing ceiling construction.

2. BRACE-TITE Field Clips are designed for use with standard ¾" cold rolled channels having ½" legs (minimum).

3. The three-coat plastering method is required over Perforated ROCKLATH, and recommended over Plain and Insulating ROCKLATH when drying conditions are unfavorable.

4. In ceiling constructions certain precautions concerning construction, isolation and ventilation are necessary for good performance (see Specifications, page 3).

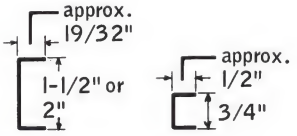
5. Maximum support spacing 16" o.c.

A.I.A. File No. 20-B-2

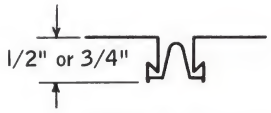
*Reg. U.S. Pat. Off.

components | details

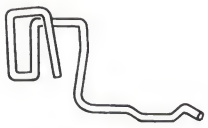
BRACE-TITE field clip BT-1



USG cold rolled channels



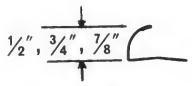
USG control joint



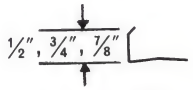
BRACE-TITE
starter
clip BT-1

USG
selv-edge
cornerite

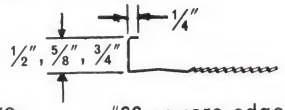
USG casing beads (expanded or short flange)



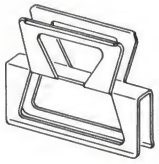
#4 or #138 quarter round



#60 semi-square

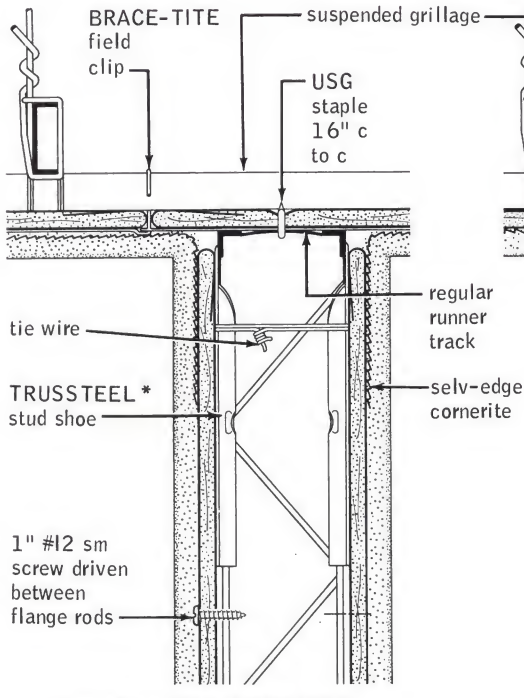


#66 square-edge

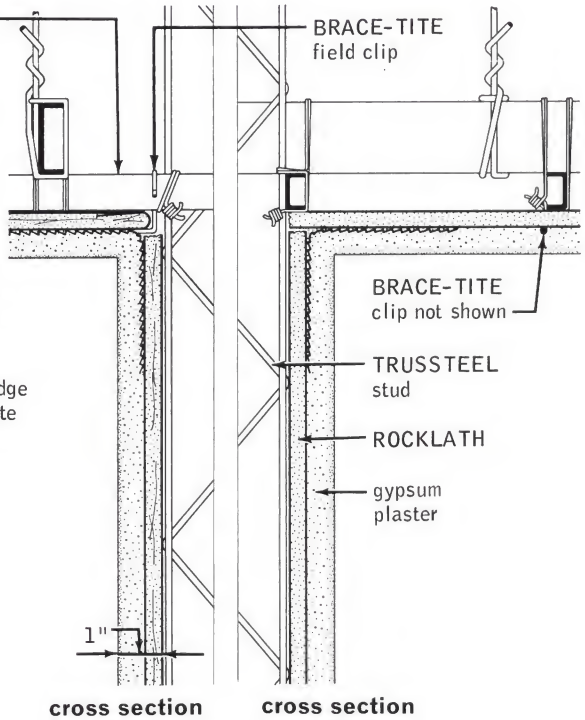


BRIDJOINT* B-1
field clip

see "plaster bases" product catalog for full description on accessories & sizes



cross section transverse to furring channel



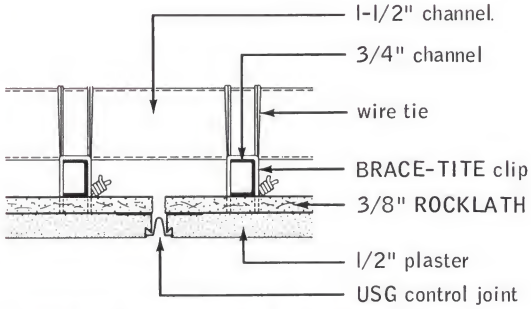
cross section transverse to furring channel

cross section parallel to furring channel

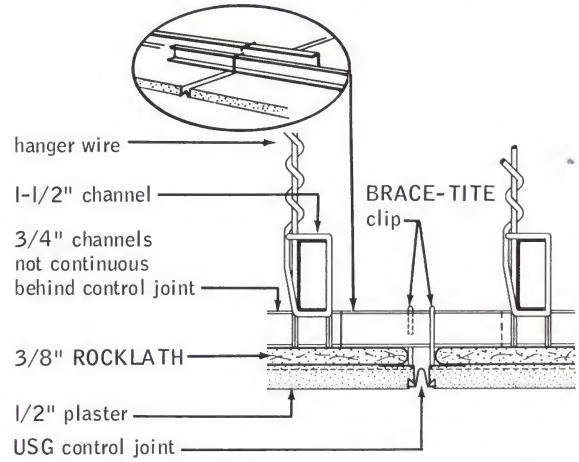
*Reg. U.S. Pat. Off.

details

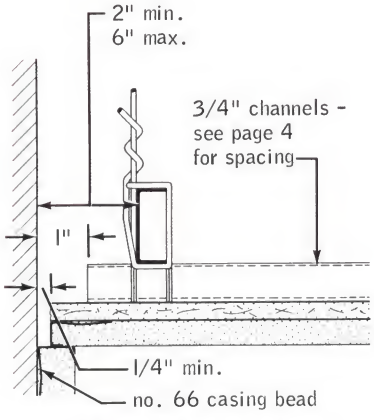
scale: 3″ = 1′-0″



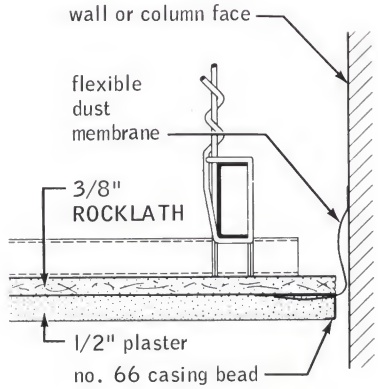
control joint parallel to ¾″ channels



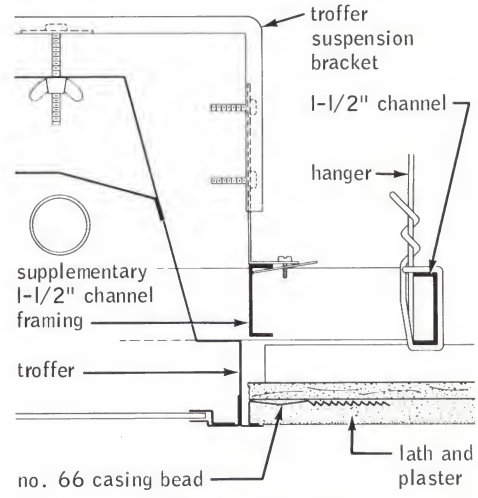
control joint perpendicular to ¾″ channels



perimeter isolation



isolation from walls or columns



vertical section at light troffer

specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *Lath and plaster surfaces (non-load bearing) will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and moisture content. It is recommended that lath and plaster surfaces be isolated from all structural elements by control joints or other means where:*

a. *a ceiling abuts any structural element, dissimilar wall or partition assembly, or other vertical penetration.*

b. *the ceiling construction changes within the plane of the ceiling.*

Main runners and cross furring members should not be let into masonry walls or partitions, and clearance of at least 1″ must be provided at each end of the channels.

Expansive ceiling areas should have control joints spaced not to exceed 60′ in either direction and the area within separated sections should not exceed 2,400 sq. ft. The continuity of grillage, lath and plaster should be broken over control joints. Control joints may be positioned to intersect light fixtures, heating vents, air diffusers, etc., which are usually considered weak spots.

3. *Holes cut in a thin lath and plaster membrane such as vents, grilles, access panels, light troffers, etc., cause a concentration of stresses in the plaster. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy and design, a control joint is not otherwise specified.*

4. *The spacing of hanger wires and channels are maximum and should not be exceeded. The grillage is designed to support the dead load of lath and plaster and is not designed to support concentrated loads of mechanical equipment or workmen, particularly after the plaster has been applied. Independently supported catwalks and equipment platforms should be provided.*

5. *Where a plaster surface is flush with metal, metal access panels, light troffers, etc., the plaster should be grooved between the two materials.*

6. *Where furred or suspended ceilings occur under roof construction, the plenum should be vented according to recommended engineering practice.*

7. *To retain maximum sound isolation, the integrity of the ceiling should not be voided by openings such as vents, light troffers, etc., so as to create sound leaks. Use sand aggregate only, do not use lightweight aggregates.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill. 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. ROCKLATH Plaster Base ⅜″ (Plain) (Perforated) (Insulating) 16″ x 48″.
b. BRACE-TITE Field Clip BT-1.
c. BRACE-TITE Starter Clip BT-1.
d. BRIDJOINT* B-1 Field Clip.
e. USG* Selv-edge Cornerite (2″ x 2″) (3″ x 3″).
f. USG Self-Furring Junior Diamond Mesh Metal Lath.
g. USG Casing Bead (specify type from page 2).
h. USG Control Joint.
i. USG Cold Rolled Channels ¾″, 1¼″ 2″.
j. 9 Gauge Hanger Wire.
k. 16 Gauge Tie Wire.
l. 14 Gauge Reinforcing Wire.
m. 20 Gauge Galvanized 1″ Hexagonal Wire Mesh (not available from U.S.G.).

grillage erection

9 gauge hangers shall be spaced not over 4′-0″ in the direction of the 1½″ main runner channels and not over 3′-0″ in the direction at right angles to the main runners, and within 6″ of the ends of main runner runs and of boundary walls, girders or similar interruptions of ceiling continuity. (*For alternate hangers, main runner channels and cross furring channels see table in USG Plaster Bases Product Folder.*)

Main runners shall be placed not over 3′-0″ o.c., properly positioned, leveled, and hangers shall be saddle tied along runner.

Main runners shall not be let into nor come in contact with abutting masonry walls. Runner channels shall be located within 6″ of the walls to support the ends of the ¾″ cross furring channels.

Cross furring channels shall be spaced (12″) (16″) o.c. and securely saddle tied with two strands of 16-gauge tie wire to main runners and shall not be let into or come in contact with abutting masonary walls.

plaster base attachment

ROCKLATH Plaster Base shall be applied with the long dimension at right angles to the ¾″ channels and secured to the channels with BRACE-TITE Field Clips. ROCKLATH end joints shall fall between channels and be secured with B-1 Field Clips on each side. Set grounds to (½″) (⅝″) (1″) minimum thickness over ROCKLATH, including 1/16″ finish.

related inclusions

One-Hour Rating—Perforated ROCKLATH, ⅝″ gypsum perlite plaster.

Two-Hour Rating—Lengths of 14-gauge wires shall be run diagonally across ceiling through each BRACE-TITE clip loop —⅝″ gypsum sanded plaster.

Three-Hour Rating—Same as two-hour rating except change furring channel spacing from 16″ o.c. to 12″ o.c. and use ½″ gypsum perlite plaster.

Four-Hour Rating—Same as three-hour rating except add the following: "Staple 20-gauge hexagonal mesh to lath and wire tie mesh to furring channels at long edge of the lath, and use 1″ gypsum perlite plaster."

lathing accessories

a. Cornerite (2″ x 2″) (3″ x 3″) shall be installed in all interior plaster angles. Staple at the edges.

b. Casing Bead No. (0000) shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed.

c. Reinforcing—Install a strip of self-furring diamond mesh lath over joints between dissimilar plaster bases. At all openings, reinforce the corners attaching a 12″ x 24″ piece of self-furring diamond mesh lath diagonally across the corners.

d. Control Joint shall be provided as detailed and where indicated. Staple in place.

UNITED STATES GYPSUM

furred attachment

ceilings

b

USG® Metal Lath and Plaster

1476

A.I.A. File No. 20-B-1

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
3 hrs.	Metal Lath & Plaster—furred or susp ¾″ cr chan—3.4# dm met lath & ⅞″ neat wood fiber gypsum plaster—2½″ conc on riblath over bar joist clg wt 9	BMS-92 table 43 (f)	N/A		clg matls 130	Relative cost based on furred construction	b-1476
1½ hrs.	Metal Lath & Plaster—furred or susp ¾″ cr chan—3.4# dm met lath & ⅝″ 100:2-100:3 gypsum sand plaster—2″ conc on riblath over bar joist clg wt 9	BMS-92 table 43 (f)	N/A		clg matls 111		b-1476

description

This lightweight ceiling assembly consists of USG Metal Lath and a gypsum plaster placed directly under steel joists, steel beams or concrete joists. In furred ceilings, the metal lath is wire-tied to ¾″ channel or ⅜″ pencil rod supports. This furred assembly permits support for the metal lath at closer intervals than is offered by the construction itself. Large openings for pipes, ducts and conduits lie between the joists. This system also provides channel support for roll or batt type insulation and good crack resistance.

Metal Lath for this assembly, expanded from rust-resisting steel, is available in three types (see Specifications, page 3). The excellent mechanical keying properties of this plaster base, give assemblies using it high fire resistance ratings (see table above).

function and utility

Furred ceilings serve to conceal and protect structural and mechanical elements with a lightweight fireproof membrane of metal lath and plaster that is easily decorated and maintained.

Fire Protection—Incombustible components make possible established fire-resistance ratings of up to 4 hours.

Economy—Light weight; the established fire resistance ratings can reduce annual insurance premiums.

limitations

1. A non-load bearing ceiling construction.

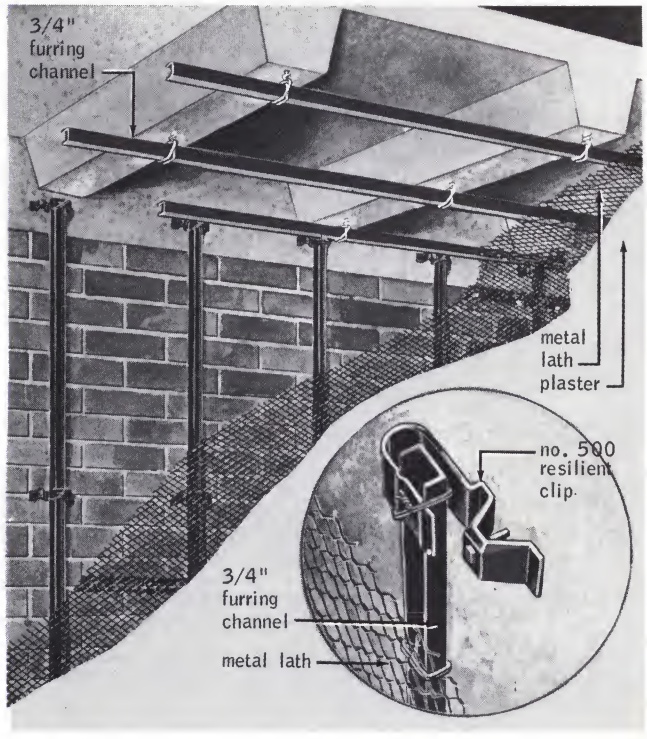
2. In ceiling constructions certain precautions concerning construction, isolation and ventilation are necessary for good performance (see Specifications, page 3).

spacing of supports for USG Metal Lath

lath type	wt. per sq. yd.	max. support spacing
Diamond Mesh	3.4 lbs.	13½″
⅛″ Z Riblath	3.4 lbs.	19″
⅜″ Riblath	3.4 lbs.	24″

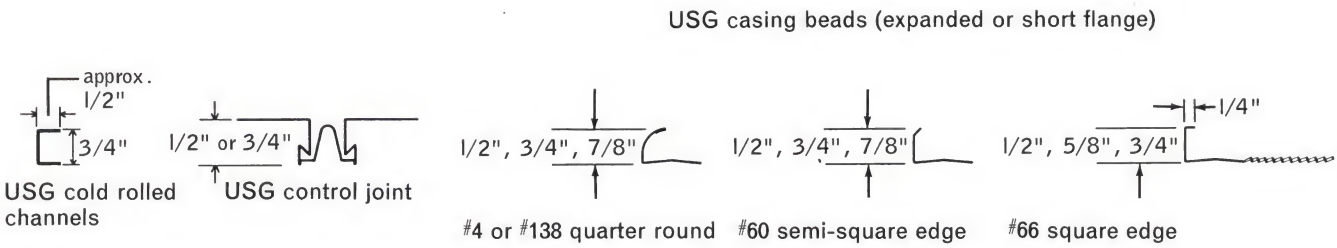
spacing of supports for ¾″ furring channel

channel spacing	max. allowable span
13½″	48″
19″	42″
24″	36″

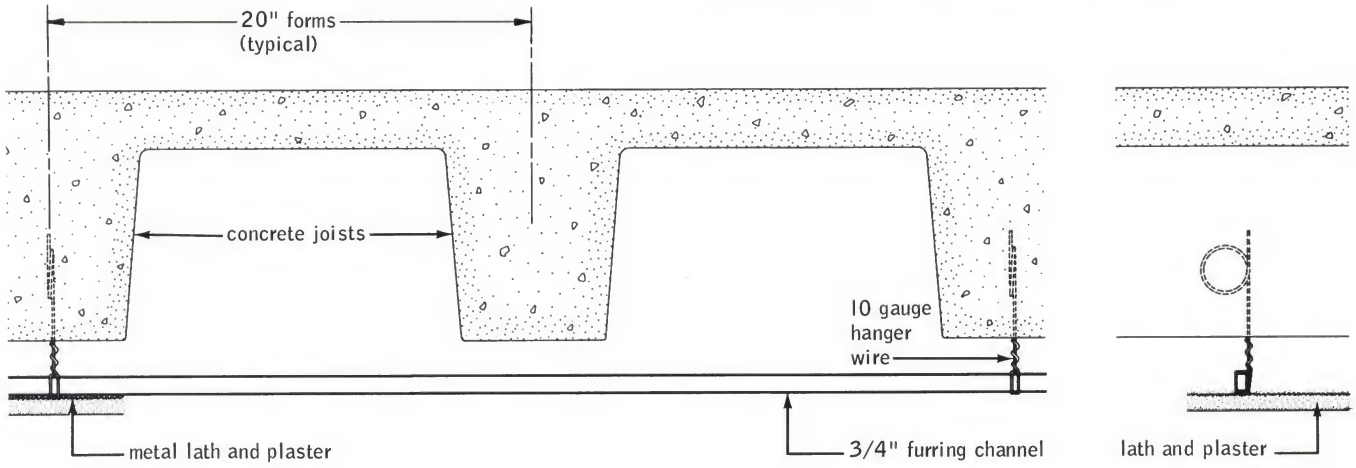


A.I.A. File No. 20-B-1

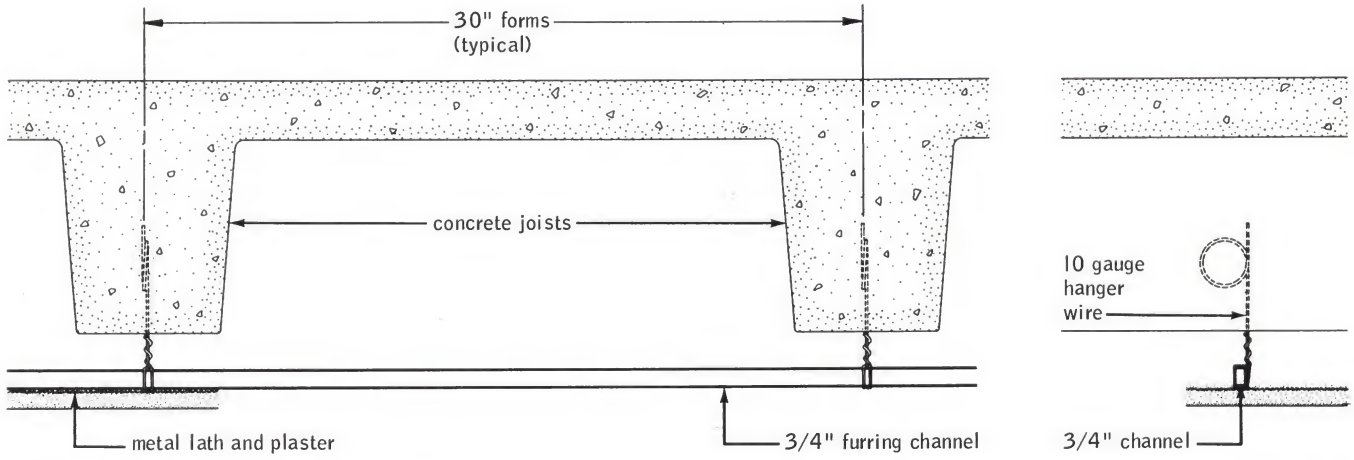
scale: 1½"=1'-0"



see "plaster bases" product catalog for full description on accessories & sizes

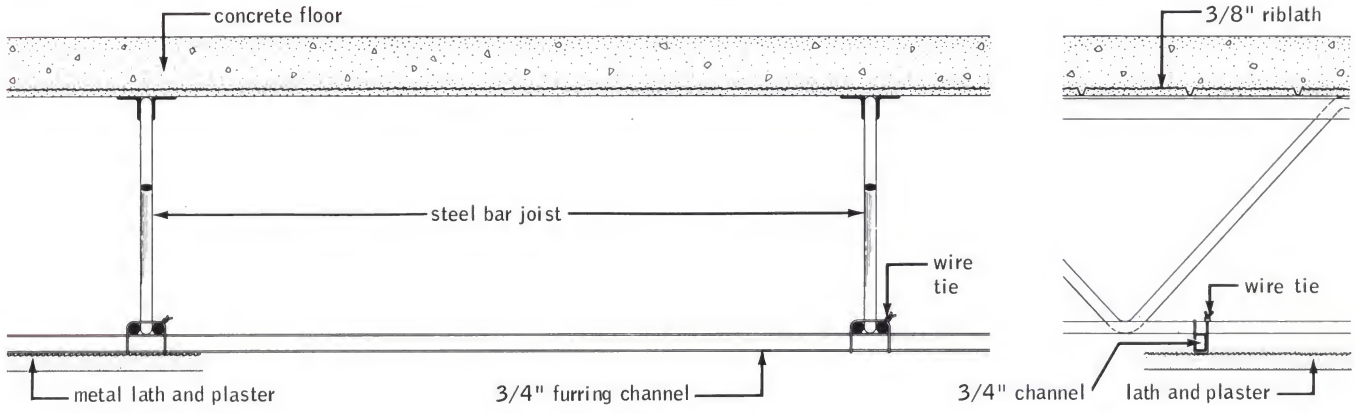


detail for concrete joists 20" form (typical)



detail for concrete joists 30" form (typical)

details



detail for steel bar joists

specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building should be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *Lath and plaster surfaces (non-load bearing) will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that lath and plaster surfaces be isolated from all structural elements by control joints or other means where:*

a. *a ceiling abuts any structural element, dissimilar wall or partition assembly, or other vertical penetration.*

b. *the ceiling construction changes within the plane of the ceiling.*

Main runners and cross furring members should not be let into masonry walls or partitions, and clearance of at least 1″ must be provided at each end of the channels.

Expansive ceiling areas should have control joints spaced not to exceed 50′ in either direction and the area within separated sections should not exceed 2,500 sq. ft. The continuity of grillage, lath and plaster should be broken over control joints. Control joints may be positioned to intersect light fixtures, heating vents, air diffusers, etc., which are usually considered weak spots.

3. *Holes cut in a thin lath and plaster membrane such as vents, grilles, access panels, light troffers, etc., cause a concentration of stresses in the plaster. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy and design, a control joint is not otherwise specified.*

4. *The spacing of hanger wires and channels is maximum and should not be exceeded. The grillage is designed to support the dead load of lath and plaster and is not designed to support concentrated loads of mechanical equipment, particularly after the plaster has been applied. Independently supported equipment platforms should be provided.*

5. *Where a plaster surface is flush with metal, metal access panels, light troffers, etc., the plaster should be grooved between the two materials.*

6. *Where contact or furred ceilings occur under the construction, the plenum should be vented according to recommended engineering practice.*

7. *To retain maximum sound isolation, the integrity of the ceiling should not be voided by openings such as vents, light troffers, etc., so as to create sound leaks. Use sand aggregate only; do not use lightweight aggregates.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. Metal Lath shall be 3.4 lb. (Diamond Mesh) (Z Riblath) (⅜″ Riblath) 27″ x 96″.

b. USG ¾″ Cold Rolled Channels.

c. USG Casing Bead (specify type from page 2).

d. USG Control Joint.

e. 18 Gauge Tie Wire.

f. 16 Gauge Tie Wire.

g. 10 Gauge Tie Wire (not available from U.S.G.).

erection for concrete joists

Hangers for attaching ¾″ channels to the underside of concrete joists shall be placed in forms before concrete is poured and shall be 10 ga. galvanized wires or other hangers of equal strength with looped ends embedded at least 2″ within the concrete. Space hangers (13½″) (19″) (24″) along the joists to engage ¾″ channels running across the joists. For concrete joists spaced approximately 25″ o.c., insert hangers in alternate joists; for joists spaced more than 25″ o.c., insert hangers in every joist but no greater than 48″ o.c.

¾″ channel furring members spaced (13½″) (19″) (24″) o.c. shall be placed across the concrete joists. Hangers shall be securely saddle-tied or wrapped around the ¾″ channels.

Channel furring members shall not be let into nor come in contact with abutting masonry walls.

Overlap of ¾″ channel ends shall be not less than 8″ with 2 ties of double strand 16 gauge galvanized wire 1″ in from each end.

erection for steel joists

Furring members shall be ¾″ cold rolled channels spaced not to exceed (13½″) (19″) (24″) and shall be erected at right angles to the steel joists. They shall be securely attached to the bottom chords with 2 strands of 16 ga. or 4 strands of 18 ga. galvanized wire or other approved attachment of equal strength.

Runners shall not be let into nor come in contact with abutting masonry walls.

Overlap of ¾″ channel ends shall not be less than 8″ with 2 ties of a double strand of 16 ga. galvanized wire 1″ in from each end.

plaster base attachment

Metal lath shall be applied with the long dimension of the sheet across the supports. The ends of all lath shall be lapped not less than 1″. If end laps are made between supports, they shall be adequately laced or tied with 18 ga. tie wire. The sides of diamond mesh lath shall be lapped not less than ½″. The sides of riblath shall be lapped by nesting outside ribs, and shall be wire tied to every support, and between supports not to exceed 9″ intervals. Wherever possible, ends of lath in adjacent courses shall be staggered. Metal lath shall be secured to all supports, with 18 ga. tie wire at intervals not exceeding 6″. At all interior angles, metal lath shall be formed into the corners and carried out onto the abutting surface, and adequately secured.

lathing accessories

a. Casing Bead No. (000000) shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed. Attach with 18 ga. tie wire 6″ o.c.

b. Control Joint shall be provided as detailed and where indicated. Attach with 18 ga. tie wire 6″ o.c.

UNITED STATES GYPSUM

suspended

ceilings

b

USG® Metal Lath and Plaster

1486

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
4 hrs. (beam 4 hrs.)	Metal Lath & Plaster—¾" cr chan susp 7¼" below deck 2" below beam—3.4# dm met lath & ⅝" 100:3 gypsum perlite plaster basecoat—½" USG acoust plaster—conc over cellular stl flr clg wt 7	GA-NBS-338 (f)	N/A		clg matls 140		b-1486
4 hrs. (beam 4 hrs.)	Metal Lath & Plaster—¾" chan 13" o.c. 3½" below beam—3.4# dm met lath & ⅞" STRUCTO-LITE (Type S) plaster—2" conc over fluted stl flr clg wt 6	UL Des 12-4 hr (f)	N/A		clg matls 129		b-1486
3 hrs. (beam 4 hrs.)	Metal Lath & Plaster—¾" cr chan susp 15½" below deck & 3½" below beam—3.4# dm mesh metal lath—⅝" STRUCTO-LITE (Type R) plaster—2" conc over cellular stl flr clg wt 5	UL Des 11-3 hr (f)	N/A		clg matls 127		b-1486
3 hrs.	Metal Lath & Plaster—¾" cr chan furred or susp—3.4# dm met lath & ⅞" neat wood fiber gypsum plaster—2½" conc on riblath over bar joist clg wt 9	BMS-92 table 43 (f)	N/A		clg matls 130	Cost index based on furred construction	b-1486
2 hrs.	Metal Lath & Plaster—3.4# dm met lath & ⅝" 100:2-100:3 gypsum sand plaster—susp 3" min clearance below flr plates—2" conc deck on stl plate flr clg wt 9	BSM-92 table 44 (f) USG-10-FT-G&H (s)		(11-f) 46 db	clg matls 126		b-1486
1½ hrs.	Metal Lath & Plaster—¾" cr chan furred or susp—3.4# dm met lath & ⅝" 100:2-100:3 gypsum sand plaster—2" conc on riblath over bar joist clg wt 9	BMS-92-table 43 (f)	N/A		clg matls 119	Cost index based on furred construction	b-1486
1½ hrs.	Metal Lath & Plaster—susp 3.4# dm met lath & 1" 100:2 gypsum sand plaster—rib type stl rf deck with 1½" wd fiber insul clg wt 13	NBS-58 (f)	N/A		clg matls 129		b-1486
1½ hrs.	Metal Lath & Plaster—susp 3.4# dm met lath & ¾" 100:2-100:3 gypsum sand plaster—rib type stl rf deck with 1" wd fiber insul clg wt 10	NBS-57 (f)	N/A		clg matls 127		b-1486
beam applications							
4 hrs.	Metal Lath & Plaster Caged Beam Fireprfg—3.4# sf dm met lath enclosing beam—1½" 100:2 gypsum perlite plaster UL 40 U18.16	UL Des 8-4 hr (f) (Beam 4 hrs)			99		b-1486
3 hrs.	Metal Lath & Plaster Caged Beam Fireprfg—9 ga galv wire wrapped around beam 18" o.c. bent over bottom flange—3.4# sf dm met lath—1" mill formulated gypsum plaster UL 40 U18.3 (Type S)	UL Des 10-2 hr (f) (Beam 3 hrs)			84		b-1486

description

This lightweight ceiling assembly consists of USG Metal Lath and gypsum plaster attached to a conventional light channel grillage suspended from construction above. Metal Lath, expanded from rust-resisting sheet steel, is readily shaped to complex contours or used for flat ceilings.

The system provides an excellent fireproof membrane to hide pipes, ducts, and conduits. Fire resistance ratings up to 4 hours, suitable for protection of beams and girders, can be obtained (see table above).

function and utility

Suspended ceilings serve to conceal and protect structural and mechanical elements with a lightweight fireproof membrane of metal lath and plaster that is easily decorated and maintained.

Fire Protection—Incombustible components make possible established fire-resistance ratings of 1 to 4 hours.

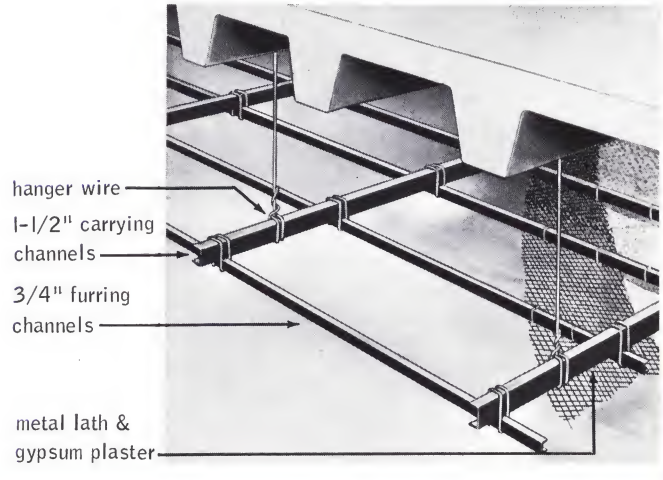
Economy—Lightweight installation; system's excellent fire resistance ratings can reduce insurance premiums.

Versatility—Ceilings with complex contours for acoustical treatment or unusual lighting effects are readily shaped with USG Diamond Mesh Lath.

limitations

1. A non-load bearing ceiling construction.

2. In ceiling constructions certain precautions concerning construction, isolation and ventilation are necessary for good performance (see Specifications, page 3).



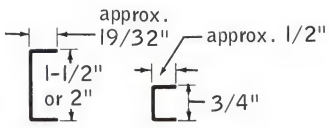
A.I.A. File No. 20-B-1

A.I.A. File No. 20-B-1

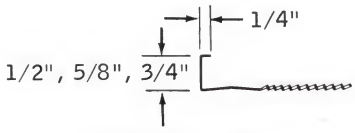
*Reg. U.S. Pat. Off.

components

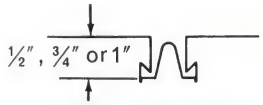
scale: 3″ = 1′-0″



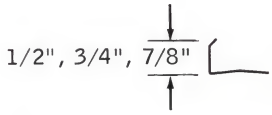
USG casing beads
(expanded or short flange)



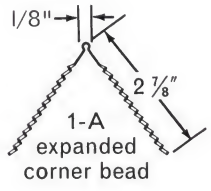
#66 square edge

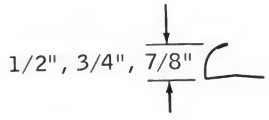


USG control joint

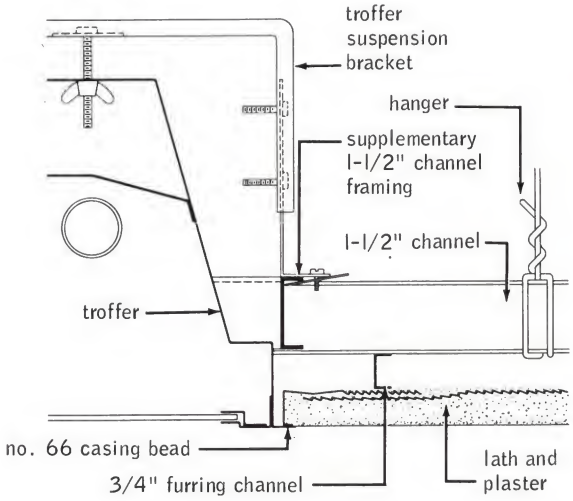


#60 semi-square edge





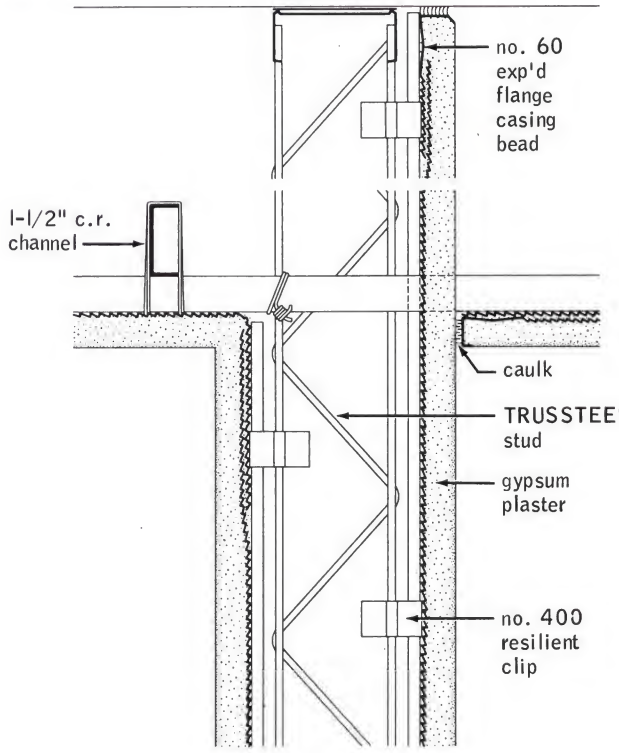
#4 or #138 quarter round



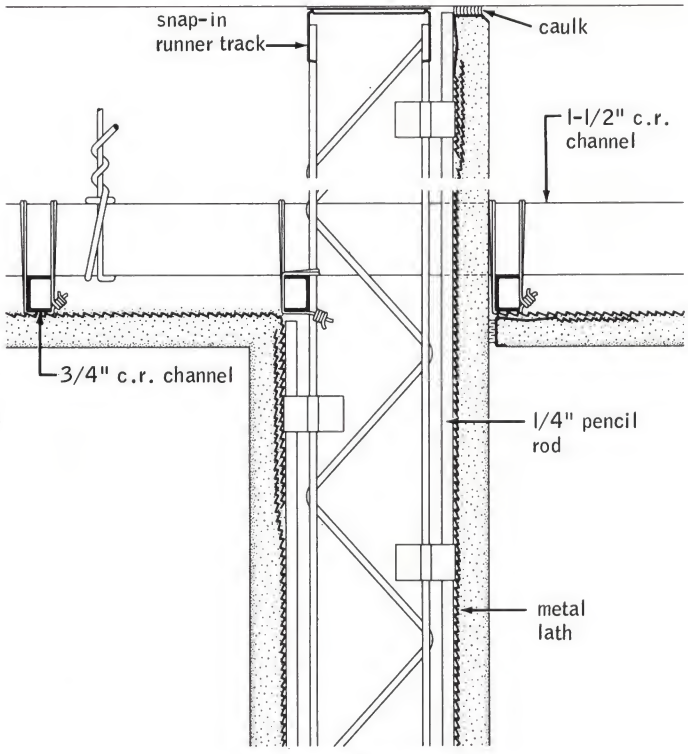
vertical section at light troffer

see Plaster Bases product catalog for full description on accessories, sizes, and spacing of supports

ceiling attachments

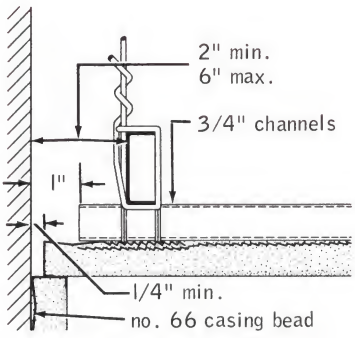


cross section transverse to furring channel

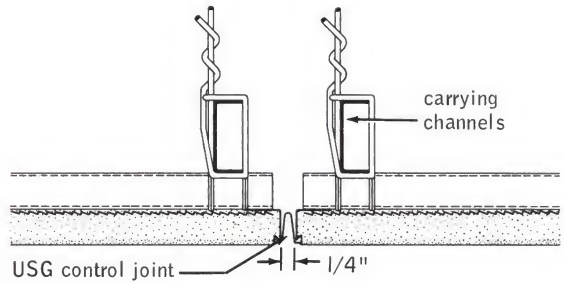


cross section parallel to furring channel

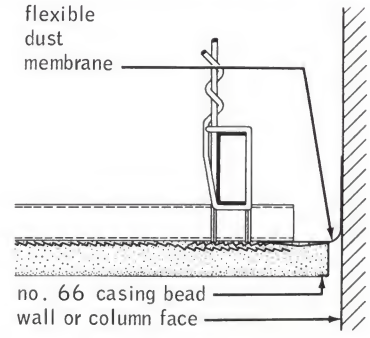
details



perimeter isolation

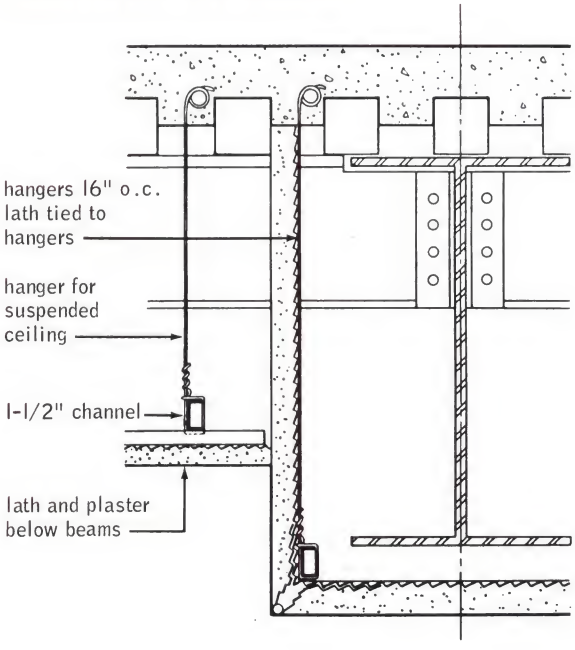


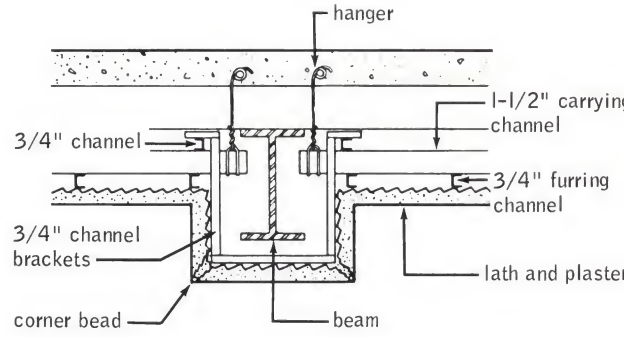
control joint



isolation from walls or columns

beam and girder fireproofing





specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *Lath and plaster surfaces (non-load bearing) will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and moisture content. It is recommended that lath and plaster surfaces be isolated from all structural elements by control joints or other means where:*

a. *a ceiling abuts any structural element, dissimilar wall or partition assembly, or other vertical penetration.*

b. *the ceiling construction changes within the plane of the ceiling.*

Main runners and cross furring members should not be let into masonry walls or partitions, and clearance of at least 1" must be provided at each end of the channels.

Expansive ceiling areas should have control joints spaced not to exceed 50' in either direction and the area within separated sections should not exceed 2,500 sq. ft. The continuity of grillage, lath and plaster should be broken over control joints. Control joints may be positioned to intersect light fixtures, heating vents, air diffusers, etc., which are usually considered weak spots.

3. *Holes cut in a thin lath and plaster membrane such as vents, grilles, access panels, light troffers, etc., cause a concentration of stresses in the plaster. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

4. *The spacing of hanger wires and channels are maximum and should not be exceeded. The grillage is designed to support the dead load of lath and plaster and is not designed to support concentrated loads of mechancial equipment or workmen, particularly after the plaster has been applied. Independently supported catwalks and equipment platforms should be provided.*

5. *Where a plaster surface is flush with metal, metal access panels, light troffers, etc., the plaster should be grooved between the two materials.*

6. *Where suspended ceilings occur under roof construction, the plenum should be vented according to recommended engineering practice.*

7. *To retain maximum sound isolation, the integrity of the ceiling should not be voided by openings such as vents, light troffers, etc., so as to create sound leaks. Use sand aggregate only, do not use lightweight aggregates.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill. 60606.

materials

See USG product folders in this series:

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Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company.

a. Metal Lath shall be 3.4 lb. (Diamond Mesh) (Z-Riblath) (⅜″ Riblath) 27″ x 96″.

b. USG Cold Rolled Channels (¾″), (1½″), (2″).

c. USG 1-A Expanded Flange Corner Bead.

d. USG Casing Bead (specify type from page 2).

e. USG Control Joint.

f. (8), (9) ga. Hanger Wire.

g. 16 ga. Tie Wire.

h. 18 ga. Tie Wire.

grillage erection

9 gauge hangers shall be spaced not over 4′-0″ in the direction of the 1½″ main runner channels and not over 3′-0″ in the direction at right angles to the main runners, and within 6″ of the ends of main runner runs and of boundary walls, girders or similar interruptions of ceiling continuity. (*For alternate hangers, main runner channels and cross furring channels see table in USG Plaster Bases Product Folder*).

Main runners shall be placed not over 3′-0″ o.c., properly positioned, leveled, and hangers shall be saddle tied along runner.

Main runners shall not be let into nor come in contact with abutting masonry walls. Runner channels shall be located within 6″ of the walls to support the ends of the ¾″ cross furring channels.

Cross furring channels shall be spaced (13½″) (16″) (19″) (24″) o.c. and securely saddled tied with two strands of 16-gauge tie wire to main runners and shall not be let into or come in contact with abutting masonry walls.

plaster base attachment

Metal lath shall be applied with the long dimension of the sheet across the supports. The ends of all lath shall be lapped not less than 1″. If end laps are made between supports, they shall be adequately laced or tied with 18 gauge tie wire. The sides of diamond mesh lath shall be lapped not less than ½″ The sides of riblath shall be lapped by nesting outside ribs, and shall be wire-tied to every support, and between supports not to exceed 9″ intervals. Wherever possible, ends of lath in adjacent courses shall be staggered. Metal lath shall be secured to all supports, with 18 gauge tie wire at intervals not exceeding 6″. At all interior angles, metal lath shall be formed into the corners and carried out onto the abutting surface, and adequately secured.

steel beam fireproofing

Framework shall be formed, as shown on drawings, of ¾″ channels or pencil rods. ¾″ channel longitudinal furring brackets shall not be spaced more than 3′-0″. Spacing for brackets formed of ¼″ pencil rod shall not exceed 19″.

Without longitudinal furring bracket, spacing is limited to 13½″ for 3.4 lb. diamond mesh lath and a minimum of one longitudinal channel is required to hold bracket alignment. Grounds shall be installed to insure required plaster thickness shown.

lathing accessories

a. Metal Corner Bead No. 1-A shall be provided on all exterior plaster corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. Fasten securely with wire-ties, spaced not over 8″ o.c.; stagger in two wings.

b. Casing Bead No. (00000) shall be installed where indicated. Ends shall be accurately cut and mitered and the casing bead shall provide full plaster grounds when securely installed. Attach with 18 gauge tie wire 6″ o.c.

c. Control Joint shall be provided as detailed and where indicated. Attach with 18 gauge tie wire 6″ o.c.

UNITED STATES GYPSUM

ceilings

b

Furred or Suspended Drywall

1496

A.I.A. File No. 20-B-2.1

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
3 hrs. (beam 3 hrs.)	⅝" SHEETROCK FIRECODE "C" Gypsum Wallbd—USG met fur chan 24" o.c.—wallbd att with 1" Type S screws 12" o.c.—joints exp or fin—3" conc on riblath over bar joist clg wt 3	UL Des 82-3 hr (f)	N/A		clg matls 40		b-1496
2 hrs.	½" SHEETROCK FIRECODE "C" Gypsum Wallbd—USG met fur chan 24" o.c.—wallbd att with 1" Type S screws 12" o.c.—joints exp or fin—2½" conc on riblath over bar joist clg wt 3	UL Des 221-2 hr (f)	N/A		clg matls 40		b-1496
2 hrs.	⅝" SHEETROCK FIRECODE Gypsum Wallbd—USG met fur chan 24" o.c.—wallbd att with 1" Type S screws 12" o.c.—joints exp or fin—2½" conc deck on riblath over bar joist clg wt 3	UL Des 82-2 hr (f)	N/A		clg matls 44		b-1496
N/A	⅝" SHEETROCK FIRECODE Gypsum Wallbd—1½" cr chan 4" o.c.—USG met fur chan 24" o.c.—wallbd screw att 12" o.c.—joints fin clg wt 3	USG-5-FT-G&H (s)		45 db	clg matls 60	"Up and over" attenuation test—suspension & clg. membrane only	b-1496
2 hrs.	⅝" SHEETROCK FIRECODE Gypsum Wallbd—USG met fur chan 24" o.c.—wallbd att with type S screws 12" o.c.—joints unfin—2½" conc on riblath over bar joist clg wt 3	UL Des 63-2 hr (f)		40 db est	clg matls 45		b-1496
1½ hrs.	⅝" SHEETROCK FIRECODE Gypsum Wallbd—USG met fur chan 24" o.c.—wallbd screw att 12" o.c.—joints fin—2" conc on riblath over bar joist clg wt 3	UL Des 4-1½ hr (f)		42 db est	clg matls 46	Sound attenuation estimate made for floor & ceiling system	b-1496
1 hr.	⅝" BAXBORD FIRECODE Gypsum Wallbd—24 ga nailing chan—wallbd att with ann nails 6" o.c.—joints unfin—2" conc on riblath fur over bar joist clg wt 3	UL Des 5-1 hr (f)		35 db est	clg matls 45		b-1496

description

This incombustible ceiling assembly consists of SHEETROCK* FIRECODE* Gypsum Wallboard screw attached to USG Metal Furring Channels. This specially designed channel, roll-formed from 25 ga. electro-galvanized steel, is 2¾" wide x ⅞" deep with ½" wing flanges. It is firmly clipped or wire tied to suspended main runner channels or wire tied to main support members. A specially designed self-tapping steel screw with a rust inhibitive coating, 1" USG Drywall Screw Type S, is used to attach the gypsum board to the furring channels. For long span requirements resulting from the location of large ducts or pipes in the ceiling space, the USG Metal Stud may be used as a ceiling furring member in this construction (see table, page 2). The assembly when completed with joints finished or exposed provides fire ratings up to 3 hours (see table above) for furred ceilings. An alternate 1-hour rated system employs nailing channels.

SHEETROCK for this assembly is available in three thicknesses and five types (see Specifications page 3). With Insulating (foil back) SHEETROCK Wallboard the system is effective as a vapor barrier and provides significant insulating value. Lower cost BAXBORD* Gypsum Backing Board provides a firm base for acoustical tile adhesively applied.

function and utility

Furred and suspended drywall ceilings serve to conceal and protect structural and mechanical elements with a lightweight fire-resistant ceiling of gypsum board that forms an ideal base for acoustical tile or is easily decorated and maintained. In addition the system also provides:

Fire Resistance—Incombustible components make possible established fire resistance ratings of 1 to 3 hours (see table above for constructions).

Versatility—Adaptable for use in virtually all types of new construction and modernization.

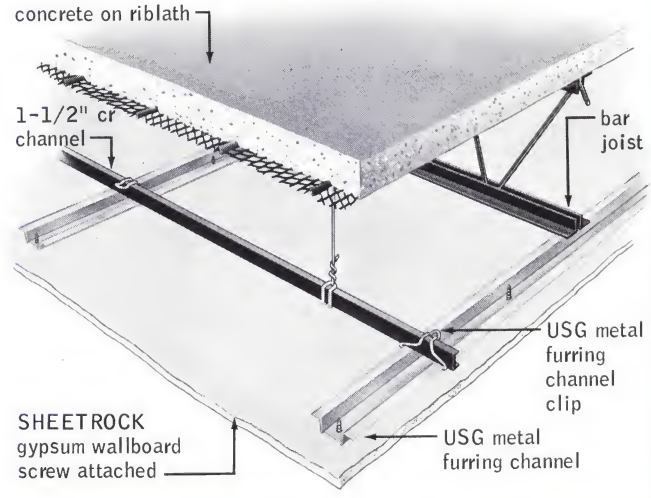
Insulation and Vapor Barrier—Insulating (foil back) SHEETROCK is an effective vapor barrier and increases the overall "U" factor of the roof-ceiling assembly (table, page 2).

Economy—Utilizes low cost materials. A minimum number of components and simplified installation procedures result in fast erection.

limitations

1. Not recommended for use where ceilings would normally be exposed to excessive moisture or continued wetting.

2. In ceiling constructions certain precautions concerning construction, isolation and ventilation are necessary for good performance (see Specifications, page 3).

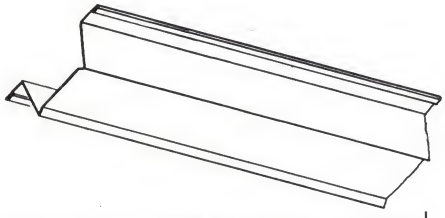


A.I.A. File No. 20-B-2.1

*Reg. U.S. Pat. Off.

scale: 3″ = 1′-0″

USG metal furring channel



see "gypsum wallboard and joint treatment" product catalogs for full description on accessories & sizes

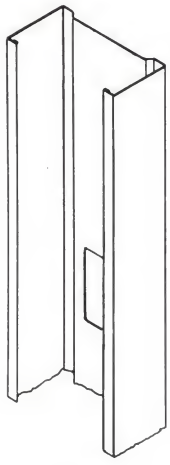
thermal resistance (R) value—insulating SHEETROCK wallboard (1)

thickness	⅜″	½″	⅝″
summer conditions	4.89	5.00	5.11
winter conditions	1.66	1.77	1.88

(1) Ceiling application, including air space of ¾″ or more behind wallboard.

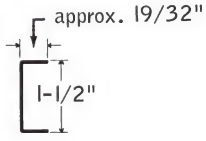
component spacing

type furring member		ceiling systems—component spacing: furring member c. to c. spacing for wallboard thickness of: ⅜″	½″	⅝″	main support member c. to c. spacing: ⅜″	½″	⅝″	hangers c. to c.
USG Metal Furring Channel		16″	24″	24″	5′-0″	4′-0″	4′-0″	4′-0″
USG Metal Stud	1⅝″ erected with both flanges up and against main support member	16″	24″	24″	7′-0″	6′-0″	6′-0″	4′-0″
	2½″	16″	24″	24″	—	6′-0″	—	
	3⅝″	16″	24″	24″	—	8′-0″	—	



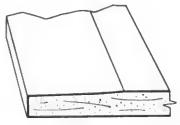
USG metal stud

USG metal furring channel clip



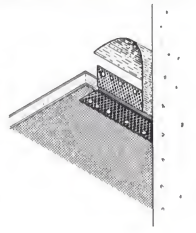
USG cold rolled channel

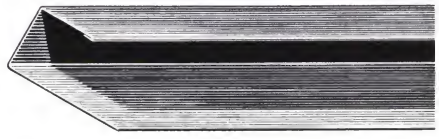
1″ USG drywall screw type S—bugle head



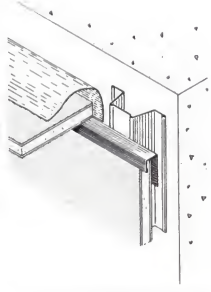
tapered edge SHEETROCK gypsum wallboard

no. 200-C USG metal trim

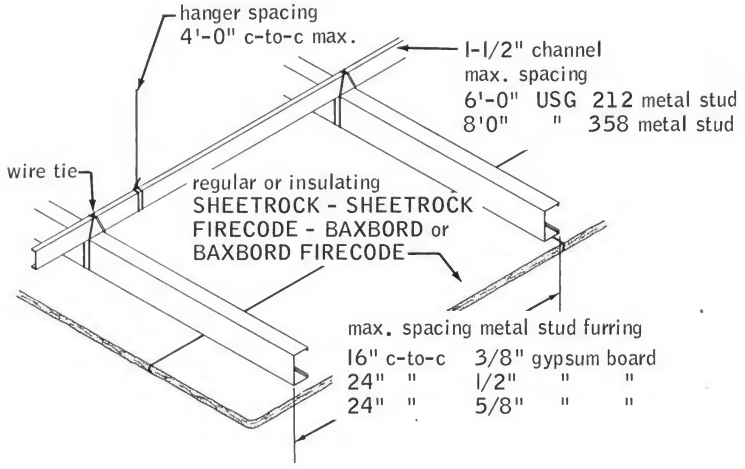


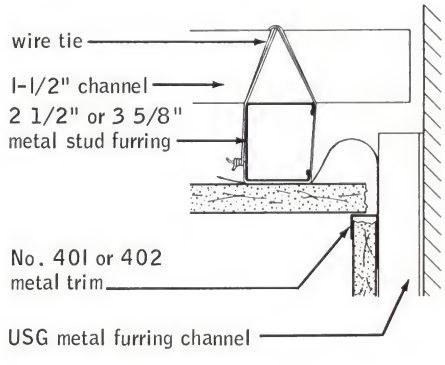


USG metal trim



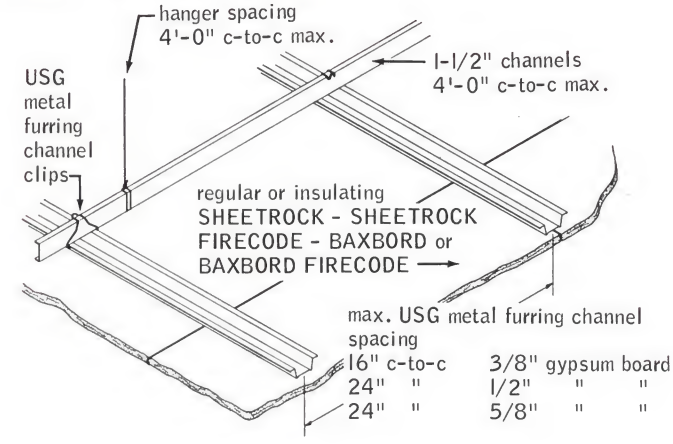
USG metal stud furring

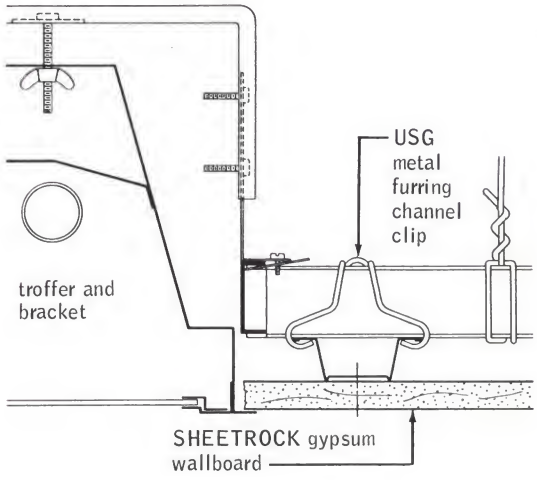


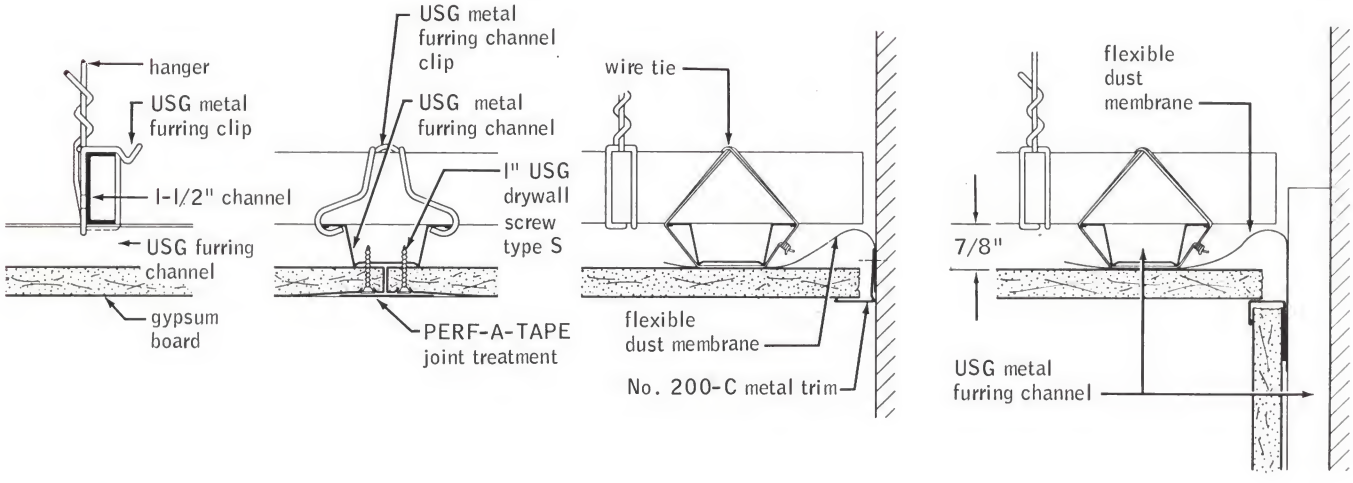


details

USG metal furring channel







specifications

notes to architect

1. *Gypsum board ceiling surfaces (non-load bearing) will not resist stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that gypsum board surfaces be isolated from all structural elements by control joints or other means where:*

a. *a ceiling abuts any structural element, dissimilar wall or partition assembly, or other vertical penetration.*

b. *the ceiling construction changes within the plane of the ceiling.*

Main runners and cross furring members should not be let into masonry walls or partitions, and clearance of at least 1" must be provided at each end of the channels.

Expansion ceiling areas should have control joints spaced not to exceed 60' in either direction and the area within separated sections should not exceed 2,400 sq. ft. The continuity of grillage and wallboard should be broken over control joints. Control joints may be positioned to intersect light fixtures, heating vents, air diffusers, etc., which are usually considered weak spots.

2. *Holes cut in gypsum board ceilings such as vents, grilles, access panels, light troffers, etc., cause a concentration of stresses in the gypsum board. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy and design, a control joint is not otherwise specified.*

3. *The spacing of hanger wires and channels are maximum and should not be exceeded. The grillage is designed to support the dead load of the gypsum board ceiling and is not designed to support concentrated loads of mechanical equipment or workmen. Independently supported catwalks and equipment platforms should be provided.*

4. *Where furred or suspended ceilings occur under roof construction, the plenum should be vented according to recommended engineering practice.*

5. *To retain maximum sound isolation, the integrity of the ceiling should not be voided by openings such as vents, light troffers, etc., so as to create sound leaks. The use of caulking to seal all cutouts and intersections with the adjoining structure is recommended.*

6. *Ridging or deformation at the panel joints may occur in gypsum board construction under adverse job or weather conditions. Back blocking end joints will minimize joint ridging and is recommended. Where back blocking is used, float the end joints between furring channels and back block with an 8" wide strip of gypsum board the full length of the joint adhesively applied over abutting ends, or screw-attach floated end joints to a 5' length of channel positioned parallel to and centered over end joint.*

7. *The PERF-A-TAPE* Joint System treatment of joints and screw heads may be omitted where the gypsum board serves as a base for the adhesive application of acoustical tile.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

general conditions

In cold weather and during the period of wallboard lamination and joint finishing, temperatures within the building shall be maintained uniformly within the range of 55° to 70° F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

materials

See USG product folders in this series:

Joint Treatment Folder for PERF-A-TAPE Joint System Specifications.

Gypsum Wallboard Folder for information on Wallboard System Components.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company.

a. Furring Channels—USG Metal Furring Channel and/or USG Metal Studs—Nos. 158 (1⅝″),—212(2½″),—358(3⅝″).

b. USG Metal Furring Channel Clip.

c. 1½″ Cold Rolled Channels.

d. 9 ga. Galvanized Hanger Wire.

e. 16 ga. Galvanized Tie Wire.

f. Gypsum Board—(⅜″) (½″) (⅝″) thick, 48″ wide Tapered Edge SHEETROCK, (Regular) (Insulating — foil back) (FIRECODE) (FIRECODE "C") Gypsum Wallboard, or BAXBORD Gypsum Backing Board, lengths as required.

g. 1″ USG Drywall Screws—Type S.

h. Joint Treatment—PERF-A-TAPE or DURABOND Joint System.

i. USG Metal Trim (specify type from page 2).

grillage erection

9 gauge hangers shall be spaced not over 4′-0″ in the direction of the 1½″ main runner channels and not over (4′-0″, 5′-0″, 6′-0″, 7′-0″, or 8′-0″) in the direction at right angles to the main runners, and within 6″ of the ends of main runner runs and of boundary walls, girders or similar interruptions of ceiling continuity. (*For hanger, main runner channel and cross furring channel spacing, see table page 2.*)

Main runners shall be placed not over (4′-0″, 5′-0″, 6′-0″, 7′-0″, or 8′-0″) o.c., properly positioned, leveled, and hangers shall be saddle tied along runner.

Main runners shall not be let into nor come in contact with abutting masonry walls. Runner channels shall be located within 6″ of the walls to support the ends of the furring channels.

(USG Metal Furring Channels) (USG Metal Studs) shall be spaced (16″) (24″) o.c. and securely clipped with USG Furring Channel Clips or saddle tied with two strands of 16-ga. tie wire to main runners or main support members and shall not be let into or come in contact with abutting masonry walls. End splices shall be provided by nesting channels or studs no less than 8″ and securely wire tying.

Metal Furring Channel Clips shall be installed on alternate sides of the main runner channel. Wire-tie Metal Furring Channel to 1½″ channel when clips cannot be alternated and to main support members.

At light troffers or any openings that interrupt the main runner or furring channels, reinforce grillage with ¾″ cold rolled channels wire tied atop and parallel to the main runner channels.

panel erection

Gypsum board of maximum practical length shall be applied with the long dimension at right angles to the furring channel and fastened with 1″ USG Drywall Screws—Type S spaced 12″ o.c. in the field of the board and along abutting ends. All abutting end or edge joints shall occur over the web surface of the furring channel and shall be fitted neatly and accurately with end joints staggered. Gypsum board shall be properly supported around all cut-outs and openings in the ceiling.

wallboard accessories

a. PERF-A-TAPE or DURABOND Joint System shall be used on all gypsum board joints and internal angles formed by the intersections of walls and ceilings.

b. Metal Trim No. (000000) shall be securely installed where indicated. Finish with PERF-A-TAPE Joint Compound, as required.

c. Fasteners shall be as shown on drawings or as herein specified. Fasteners shall be driven not less than ⅜″ from ends or edges of gypsum board to provide uniform dimple not over 1/32″ deep. Spot exposed fastener dimples on face layers with at least three coats of joint compound, feathered and sanded smooth.

d. Control Joints shall be provided in the gypsum board as indicated and shall consist of two pieces of Metal Trim back-to-back.

UNITED STATES GYPSUM

suspended

ceilings

b

QUIETONE* Grid System

CEILING PANELS—MINERAL—WOOD FIBER—LUMINOUS PLASTIC

1506

description

In this system QUIETONE ceiling panels of mineral or wood fiber with acoustical properties—or decorative wood fiber panels—are quickly and easily installed on a suspended, exposed grid consisting of only three basic parts—main tees, cross tees and a wall angle. These specially designed grid components are made of heavy-gauge electro-galvanized steel finished with durable white baked enamel. The parts interlock to create a strong rigid construction that is flush and square. The grid assembles to form either 2′x2′ or 2′x4′ ceiling modules and provides easy access to the plenum space.

Acoustical ceiling panels for this assembly are ½″ thick; available in two sizes, 2′x2′ and 2′x4′, and in two types, mineral fiber (MF) and wood fiber. QUIETONE wood fiber ceiling panels are available in these well-accepted patterns: **Pin Perforated** (plain white) with more than 1,000 perforations psf; a **Fissured** pattern simulating travertine marble; **Custom-Crylic,** a scrubbable finish in pin-perforated pattern. Check your U.S.G. representative for other wood fiber decorative patterns available locally.

QUIETONE MF Acoustical Panels for this assembly are available in two patterns, **Star Pin-Perforated** and **Fissured.** QUIETONE MF Panels are incombustible, strong, washable and offer good light reflectance and sound control characteristics. USG® Luminous Panels of flat white styrene plastic to blend with QUIETONE Ceiling Panels are available for use under fluorescent tube fixtures. The washable matte finish provides smooth diffused light and a 55% light transmission rating. The luminous panels give ready accessibility for fixture maintenance.

function and utility

Acoustical ceiling systems serve to conceal ductwork, open joists or unsightly old ceilings while providing beauty, concealed lighting and sound control. The QUIETONE Ceiling System meets these requirements and in addition offers other features:

Versatility—Adaptable for use in commercial and residential new construction or remodeling; the system's extra strength and moisture resistance suit it for such uses as commercial laundries and kitchens. A choice of patterns and module sizes are available to meet esthetic and design requirements.

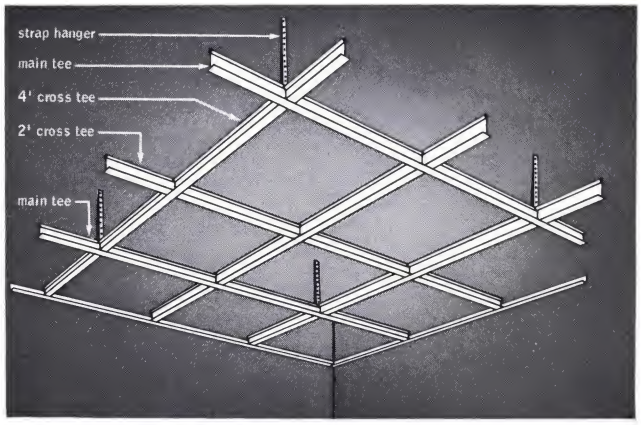
Fire Resistance—QUIETONE MF Panels are classified incombustible, Class A, per Fed. Spec. SS-A-0118b and have a flame spread index of 5.

Sound Control—QUIETONE MF (Star Pin-Perforated Pattern) offers sound attenuation of 42 db, 11-frequency average, effectively retards sound travel through the ceiling and over partitions. Sound Transmission Class 39. Sound absorption: .55-.65 NRC.

Light Reflectance—QUIETONE Panels reflect 75% or better of the available light—Class A.

Economy—Simple low cost components and fast installation result in economical erected job costs. The washable vinyl paint surface on QUIETONE Panels keeps maintenance costs low.

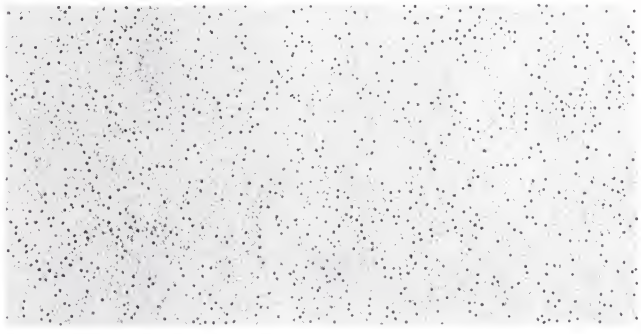
QUIETONE ceiling grid



limitations

1. A non-load bearing ceiling construction.
2. Not a fire-resistance rated system.
3. USG Luminous Panels recommended for use with fluorescent fixtures only.
4. In ceiling constructions certain precautions concerning construction and ventilation are necessary for good performance (see Specifications, page 4).

QUIETONE wood fiber ceiling panel



Custom-Crylic Pin-Perforated pattern

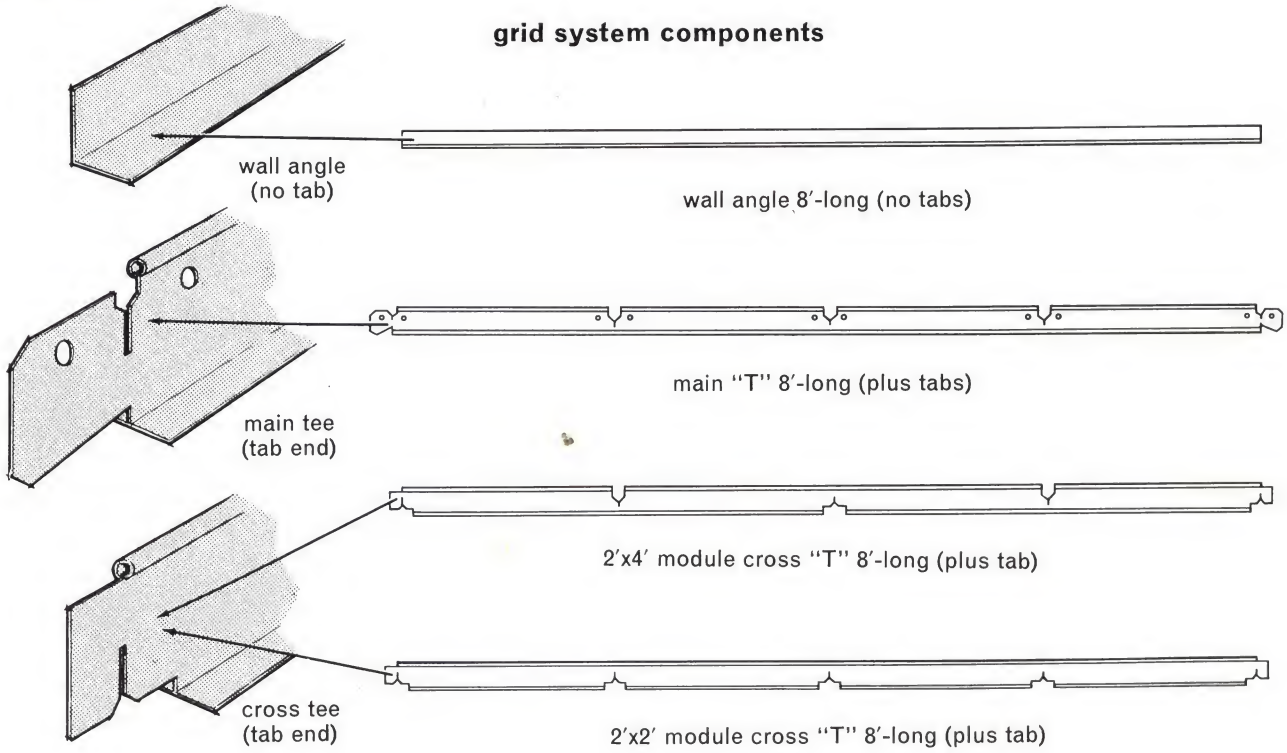
QUIETONE MF ceiling panel

Star Pin-Perforated pattern

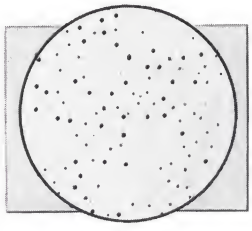
*Reg. U.S. Pat. Off.

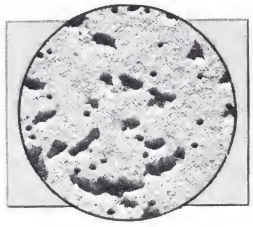
components

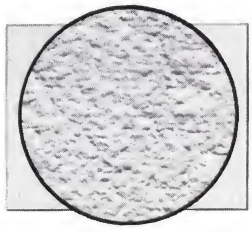
grid system components

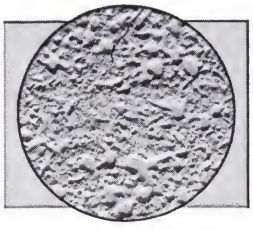


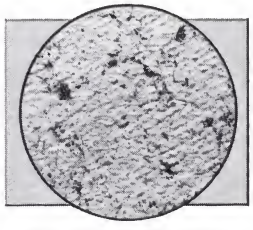
ceiling panels

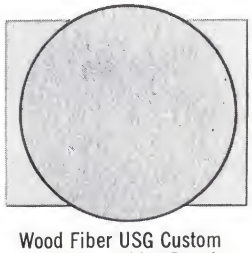

Wood Fiber Pin Perf.
QUIETONE Ceiling Panels

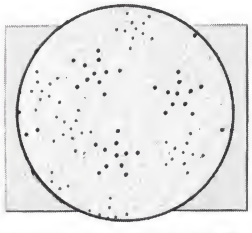

Wood Fiber Fissured
QUIETONE Ceiling Panels

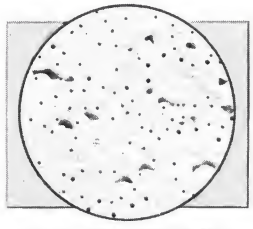

Wood Fiber Custom-Crylic
Decorative Ceiling Panels
(also pin-perf. in QUIETONE)

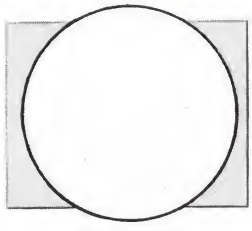

Wood Fiber Snowdrift
Decorative Ceiling Panels


Wood Fiber Golden Veil
Decorative Ceiling Panels

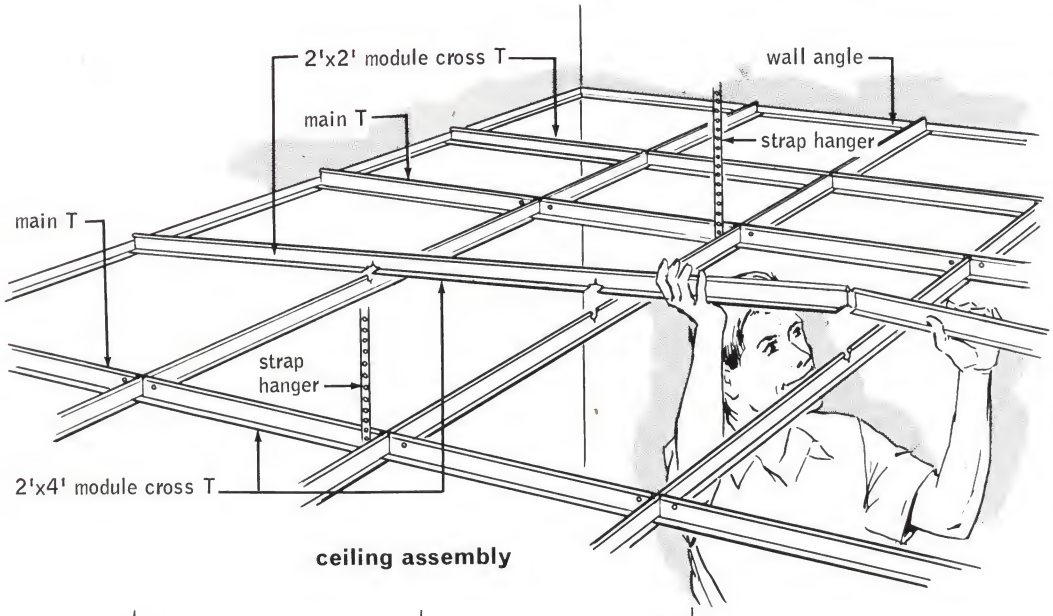

Wood Fiber USG Custom
Decorative Ceiling Panels


Star Pin Perf. QUIETONE MF
Ceiling Panels

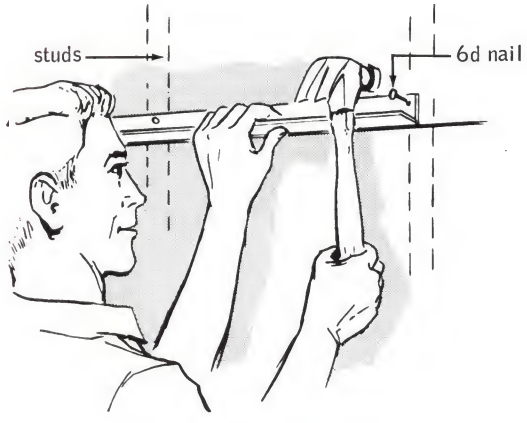

Fissured QUIETONE MF
Ceiling Panels


USG Luminous
Ceiling Panels

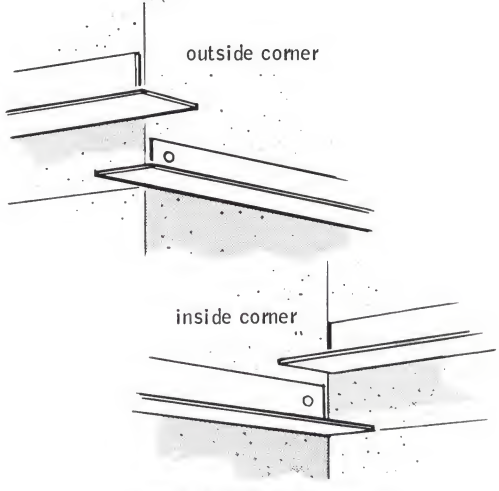
details



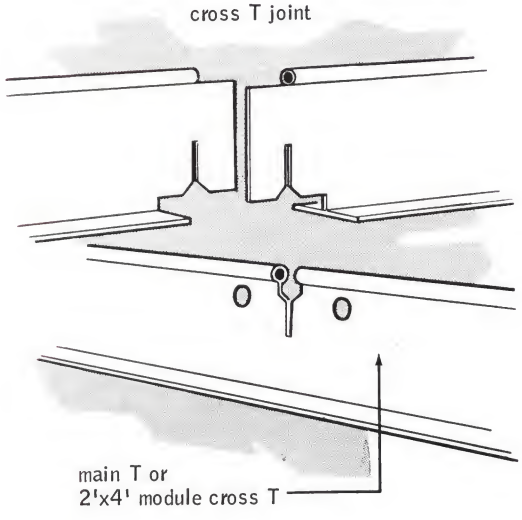
ceiling assembly



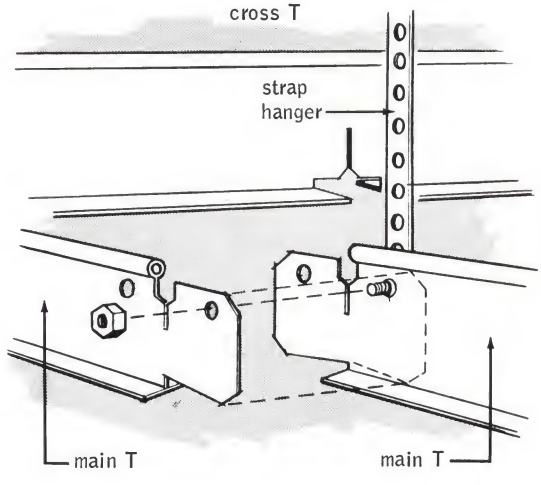
wall angle attachment



wall angle at corners



cross tee splice at intersection with main tee



main tee splice at intersection with cross tee

*Reg. U.S. Pat. Off.

specifications

notes to architect

1. *The spacing of hanger wires and channels is maximum and should not be exceeded. The grillage is designed to support the dead load of the acoustical ceiling and is not designed to support concentrated loads of mechanical equipment or workmen, particularly after the ceiling tile has been applied. Independently supported catwalks and equipment platforms should be provided.*

2. *Where suspended ceilings occur under roof construction, the plenum should be vented according to recommended engineering practice.*

3. *To retain maximum sound isolation, the integrity of the ceiling should not be voided by openings such as vents, light troffers, etc., so as to create sound leaks.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

general provisions

QUIETONE Ceiling Panels shall not be installed when the building is excessively cold and damp or hot and dry. Temperature and humidity conditions shall, as closely as possible, approximate those interior conditions which will exist when the building is occupied. All plastering, concrete and terrazzo work should be complete and dry. The panels shall not be installed unless satisfactory closures for windows and doors are in place and roofs are tight.

The heating system should be installed and operating where necessary to maintain proper conditions before, during and after the panels have been installed.

Poured concrete, gypsum or similar roof decks should be thoroughly dry and the space between such decks and the suspended ceiling adequately vented to the outside.

materials

All materials herein specified shall be manufactured by the United States Gypsum Company.

a. QUIETONE Wood Fiber Ceiling Panel, (Pin-Perforated) (Fissured) (Custom-Crylic) pattern, (2′x2′) (2′x4′).

b. QUIETONE MF Ceiling Panel, (Star Pin-Perforated) (Fissured) pattern, (2′x2′) (2′x4′).

c. USG Decorative Ceiling Panel, (Custom-Crylic), (Custom), (Snowdrift), (Golden Veil) pattern, (2′x2′) (2′x4′).

d. USG Luminous Panel, (2′x2′) (2′x4′).

e. Main Tee.

f. Cross Tee for 2′x2′ Design.

g. Cross Tee for 2′x4′ Design.

h. Wall Angle.

i. 12 ga. Galvanized Strap Hanger.

erection

12-ga. hangers shall be spaced not over 4′ along the main tees and within 6″ of the ends of main tees, of main tee splices, of boundary walls, girders or similar interruptions of ceiling continuity. Main tees shall be placed 4′ o.c., properly positioned, leveled, and hangers shall be wire tied along tees. Main tees shall not be let into nor come in contact with abutting masonry walls. Cross tees for 2′x4′ design shall be spaced 2′ o.c. along the main tees with notches securely interlocking the notches in main tees. Cross tees for 2′x2′ design shall be placed at mid-point of 4′ cross tees with notches securely interlocking the 2′x4′ design cross tees. Wall angles securely attached 16″ o.c. shall be provided at the wall intersections. At interior corners where angle is to continue, the flange shall be cut and the web bent to form corner overlapping angle flange. Exterior corners shall be neatly butted. Panels shall be inserted where shown on the drawings.

UNITED STATES GYPSUM

ceilings

b

electric cable system

Radiant Heat Plaster/Wood Framing

1516

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
1 hr.	RED TOP Radiant Heat Plaster—1″ nom wd sub-fin flr on wd joist—spec Type X plaster base att direct—5d nails 6″ o.c.—fiber tape stapled over joints—elect heat cables embedded in ¼″ radiant heat plaster clg wt 5	FPRI 39 (f)	N/A		clg matls 32	Better heat emission, higher cable temps. than with other plasters	b-1516

description

This remarkable new ceiling assembly combines the first gypsum products to be specifically formulated for use with electric cable ceiling heat—RED TOP* Radiant Heat Plaster and Plaster Base. Their development represents a major breakthrough in providing a ceiling surface with a higher resistance to heat deterioration.

In this system, special RED TOP Radiant Heat Plaster Base, ½″ or ⅝″ thick, 4′ wide and in lengths of 8′ to 14′, is nailed directly to wood joists—or screwed to the RC-1 Resilient Channel for resilient application. Joints are covered with 2½″ wide IMPERIAL* glass fiber reinforcing tape, staple applied. The electric cable then is stapled to plaster base in conventional manner. Application of RED TOP Radiant Heat Plaster follows—first a 3/16″ fill coat to completely embed the cable; about one to two hours later, a 1/16″ finish coat.

When these components are used, maximum allowable operating temperature restrictions for gypsum products are removed. RED TOP Radiant Heat components maintain their integral strength and hardness at sustained operating temperatures (see Limitations).

function and utility

Wherever radiant electric cable ceiling heat is desired, this system is readily applicable. It can be used in conjunction with walls of plaster, gypsum wallboard or exposed masonry. The ceiling finish can be either smooth troweled or textured. Other features:

Heat Emission—Because of its higher density and total plaster thickness of only ¼″, RED TOP Radiant Heat Plaster provides faster, more efficient and more even heat emission than conventional plaster or laminated drywall ceiling heat installations. Gives more rapid response, less over-ride, greater comfort.

Long-Term Performance—Job-proven on more than 100,000 sq. ft. of ceilings applied under average conditions. This system avoids such faults of other methods as separation of lath or wallboard paper from core, delamination of plaster from lath, plaster cracking, "hot voids" in dry cavities, and puncturing of cable by finish nails.

Economy—Offers lower applied costs than other material combinations; 1,200 sq. ft. per ton average coverage. Components are quickly applied by conventional means with regular tools.

limitations

1. Cable operating temperature can reach as high as 140°F. provided heating cable wattage of 2.75 watts per lin. ft. and watt density of 25 watts per sq. ft. (a minimum cable spacing of 1.5″ o.c. as specified by National Electric Code, 422-52b) are not exceeded. This compares with Gypsum Assn. maximum temperature restriction of 125°F. for heating elements in contact with conventional plaster.

2. A non-load bearing ceiling construction.

3. In ceiling constructions, certain precautions concerning construction and ventilation are necessary for good performance (see Specifications, Page 4).

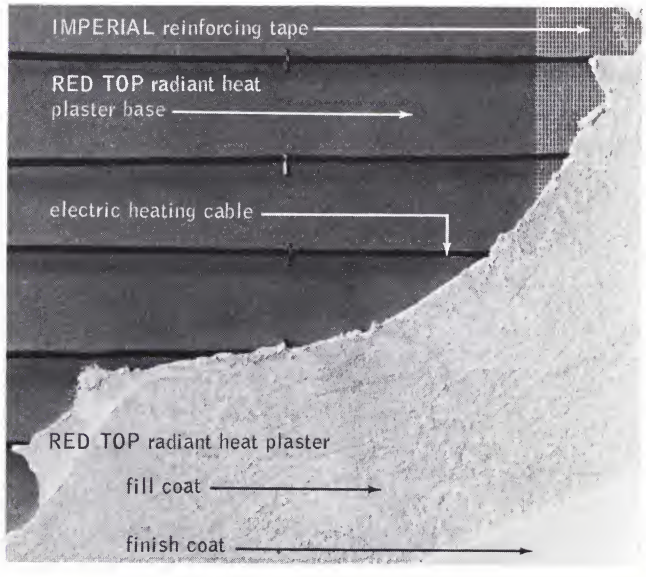
4. Maximum support spacing: 16″ o.c. with base applied with long edges parallel with joists; 24″ o.c. if applied with long edges across joists (see table following).

attachment of RED TOP Radiant Heat Plaster Base

thickness of base	type fastener for wood framing
½″	Ring shank nail, countersunk, polished or blue—min. 1¼″ long, 12½-ga., 15/64″ head dia. or Barbed shank nail, countersunk, cement coated—min. 1¼″ long, 13-ga. dia., 15/64″ head dia. or 1¼″ GWB-54 Annular Ring Nail, 12½-ga., ¼″ head dia. with slight taper to small fillet at shank, bright finish, med. diamond point. or 1⅝″, 5d cooler type nail—cement coated or 1¼″ USG* Drywall Screw, Type W or 13-ga. 1¼″ long screw, 19/64″ flat head, blued
⅝″	Ring shank nail, countersunk, polished or blue—min. 1⅜″ long, 12½-ga., 15/64″ head dia. or Barbed shank nail, countersunk, cement coated—min. 1⅜″ long, 13-ga., 15/64″ head dia. or 1⅜″ Annular Ring Nail (specifications same as for GWB-54 except for length) or 1⅞″, 6d cooler type nail—cement coated or 1¼″ USG Drywall Screw, Type W

Max. Framing Spacing (c. to c.): 16″ with board applied parallel with joists, 24″ with board applied across joists. Fastener Spacing (c. to c.): 7″.

Resilient Application: USG 1″ Type S Screw, spaced 12″ o.c., for attachment to RC-1 Resilient Channel.



A.I.A. File No. 30-C-4.4/20-B-2

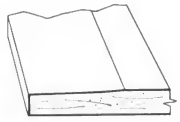
A.I.A. File No. 30-C-4.4/20-B-2

*Reg. U.S. Pat. Off.

components

wallboard annular ring nail

1″ USG screw—type S—bugle head



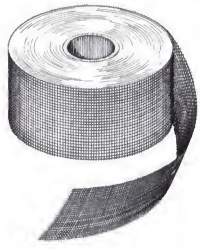
RED TOP
radiant heat
½″ or ⅝″ plaster base

barbed shank nail

1¼″ USG screw—type W—bugle head

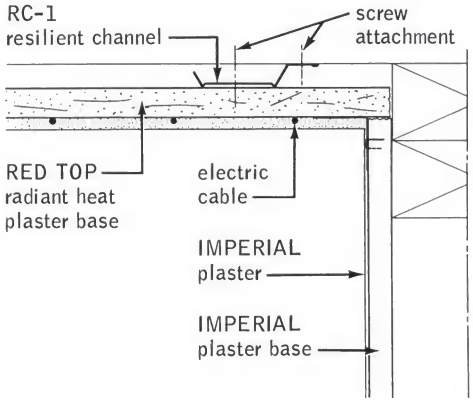
ring shank nail

cooler nail—cement coated

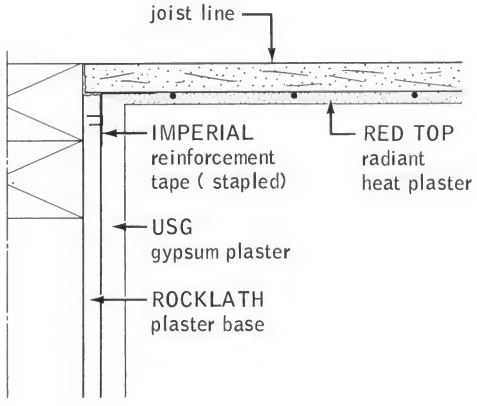


IMPERIAL joint
reinforcement tape

RED TOP radiant heat ceiling
IMPERIAL plaster base system/side walls



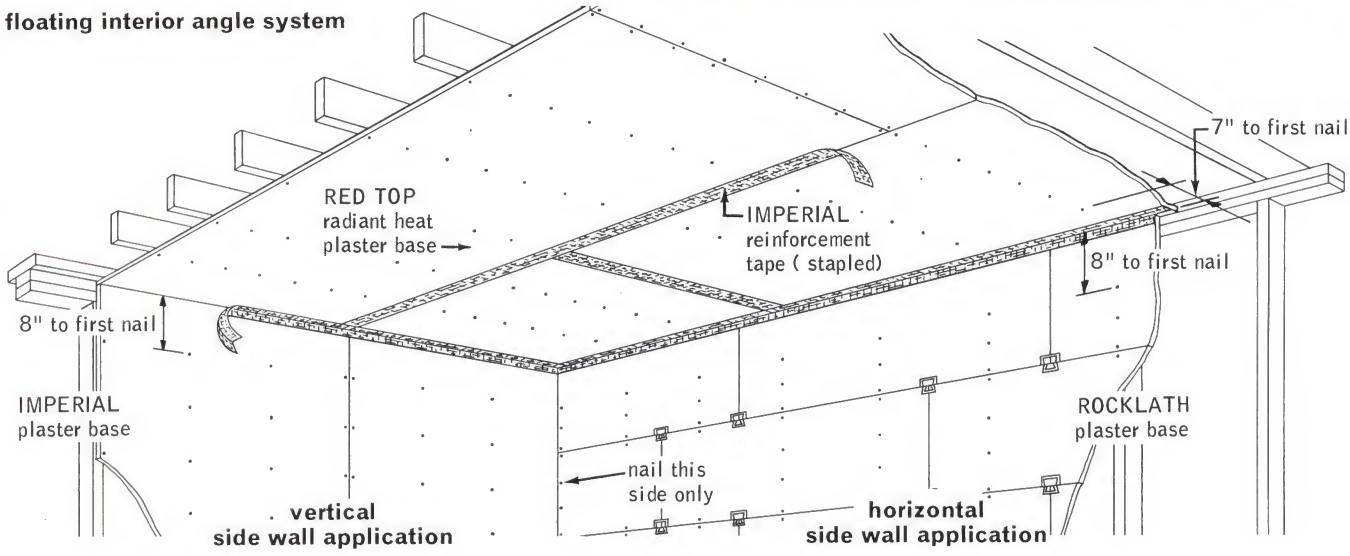
RED TOP radiant heat ceiling
ROCKLATH plaster base system/side walls



details

scale: 3″ = 1′0″

floating interior angle system



specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *The following specifications cover the lathing and plastering materials for use in wood frame residential construction where individual ceiling areas do not exceed 600 sq. ft., or where room lengths do not greatly exceed 30 lin. ft. In unusual cases, where ceiling areas exceed these figures, it is recommended that a control joint be used. Suggested details may be obtained for individual job requirements.*

3. *Holes cut in a thin lath and plaster membrane such as vents, grilles, access panels, light troffers, etc., cause a concentration of stresses in the plaster. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy and design, a control joint is not otherwise specified.*

4. *Where contact or furred ceilings occur under roof construction, the plenum or attic space should be vented according to recommended engineering practice.*

5. *To retain maximum sound isolation, the integrity of the ceiling should not be voided by openings so as to create sound leaks.*

6. **Wood Framing Requirements**—*Wood framing meeting the following minimum requirements is necessary for proper performance.*

   a. *Framework shall meet the minimum requirements of FHA and local building codes.*

   b. *Framing members shall be straight, true, of uniform dimension, and framing shall be properly aligned.*

   c. *All framing lumber shall be of a good grade for the intended use, and 2″ x 4″ nominal size or larger shall bear the grade mark of a recognized inspection agency using grading rules for lumber recommended to American Lumber Standards Committee.*

   d. *All framing lumber shall have a moisture content not in excess of 15% at the time of gypsum base application. Use of kiln dried lumber for joists is recommended.*

   e. *Extremely hard (dense) or soft framing members should not be used for attachment of base.*

7. **Insulation Recommendations**—*Type and amount of insulation should be as specified by the heating contractor or the designer of the cable heating system; or, ceiling should be insulated according to minimum All-Weather Comfort Standards—R-24, 6″ THERMAFIBER* Insulating Wool Blankets or R-24, 7″ THERMAFIBER Blowing Wool. See USG Product Folder on Insulating Wool for additional information.*

8. **Electric Cable**—*The electric radiant heating cable should be an approved cable, of adequate wattage to properly heat the areas in which it is used (the cable is not sold or supplied by U.S.G.) The designer of the cable heating system should indicate the type, wattage, and spacing no closer than 1½″ o.c., as specified by the National Electric Code, 422-52b. The electric radiant heating cable should not be used or placed into operation until the plaster is thoroughly dry.*

After the RED TOP Radiant Heat Plaster Base and IMPERIAL Tape have been installed, the electric radiant heating cable should be applied. This should be done by others in accordance with the design requirements and the cable manufacturer's specifications. The cable should be attached to the ceiling in such a manner that it is kept taut and does not sag away from the plaster base. All cable connectors and non-heating leads should be embedded into but not through the plaster base so they do not project beyond the surface of the plaster base any more than the heating wires.

9. **Painting**—*The plaster should be dry, sound, clean, free of dust, grease, or oil. The cable must be de-energized at least 6 hours prior to the start of painting. Supplementary heat, if necessary, should be provided to maintain room conditions at the desired temperature.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill. 60606.

general conditions

The building temperature shall be maintained in a uniform range above 55°F prior to, during, and after the application of the RED TOP Radiant Heat Plaster components. All materials shall be delivered to the job in the original, unopened containers or bundles, stored in a place protected from exposure to the elements and from damage by tampering, and used in strict accordance with the manufacturer's directions.

materials

See USG product folders in this series:

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

(*continued on page 4*)

*Reg. U.S. Pat. Off.

specifications (*continued*)

a. RED TOP Radiant Heat Plaster Base, square edge (½″) (⅝″), in lengths (8′, 10′, 12′, 14′) as long as practical to minimize the number of end joints.

b. Nails and/or USG Drywall Screws as selected from Table, page 1. Nails are not available from U.S.G.

c. Joint Reinforcement—IMPERIAL Tape.

d. Staples for attachment of joint reinforcing tape—rosin coated, flattened, galvanized wire with legs not less than ⅜″ in length (not available from U.S.G.).

e. Plaster—RED TOP Radiant Heat Plaster.

f. RC-1 SHEETROCK* Resilient Channel.

plaster base attachment

RED TOP Radiant Heat Plaster Base shall be applied to ceiling joists before the wall materials are placed, and across the joists with all end joints occurring over a framing member, but shall be staggered in adjacent rows. Nailing shall proceed from the central portion of the base toward the ends and edges.

While the nails are being driven, the base shall be held in firm contact with the underlying support. Nails shall be spaced approximately 7″ o.c. and not less than ⅜″ from the edges and ends of the base, except at the intersection with the walls to provide for a floating ceiling angle. Heads of nails shall be set flush with the surface of the paper or slightly dimpled but not breaking the paper. Plaster base shall be neatly cut and fitted for electrical outlets, etc.

resilient ceiling application

RC-1 Resilient Channels shall be attached at right angles to wood joists and fastened to soffit of joist with USG 1¼″ Type W screws driven through the pre-punched holes in the channel flange. *Do not use nails.* Channels shall be located within 6″ of the wall-ceiling intersection, spaced not more than 16″ o.c., extended into all corners and fastened to corner framing. Do not cantilever channels more than 6″. Channels shall be spliced directly under joists by spacing the channels ⅛″ apart and screwing both end attachment flanges to the joist. Splices shall be staggered and not be made directly over plaster base edge joints.

RED TOP Radiant Heat Plaster Base of maximum practical length shall be applied with the long dimension at right angles to the channels and with end joints centered over the channel, staggered and neatly fitted. Plaster base shall be fastened to channels with USG 1″ Type S screws spaced 12″ o.c. in the field of the base and along abutting ends. Screws shall be driven at least ⅜″ from ends or edges of base.

floating ceiling angle application

Recommended framing practices for floating ceiling angles shall be used. RED TOP Radiant Heat Plaster Base must fit snugly into all ceiling angles. At the wall/ceiling intersection, the first nail shall be nominally 7″ from the wall intersection. Nail spacing shall be as specified in the remainder of the ceiling area.

On the sidewalls, all wallboard or gypsum plaster base must be applied to overlap and maintain firm contact at ceiling line in order to support the ceiling plaster base previously applied. Along the ceiling intersection, nails directly at the ceiling angle shall be omitted. The first nail shall be nominally 8″ from the ceiling intersection.

application of joint reinforcing tape

IMPERIAL Tape shall be applied to all ceiling joints and attached with a spring-driven hand stapler, using the specified staples. Tape shall be applied over the full length of all edged and butt joints, but shall not overlap at intersections. Two staples, one on each side of the joint, shall be placed at the end of the tape. Keeping the tape taut, staples shall then be placed 12″ o.c. along the length of the tape, alternating from side to side. The other end of the tape shall be secured with two staples, one on each side of the joint. In the ceiling/wall angles, the tape shall be stapled 12″ o.c. to the ceiling plaster base only.

mixing and application of plaster

a. Mixing. Plaster shall be mixed according to manufacturer's directions using a heavy-duty drill capable of producing a minimum of 650 rpm *under load.* No more material than can be applied in 30 minutes shall be mixed. Do not retemper.

b. Application. RED TOP Radiant Heating Plaster shall be applied to a total thickness of ¼″ over RED TOP Radiant Heat Plaster Base. Apply a fill coat of the plaster parallel to the direction of the cable and of sufficient thickness to *completely cover the cable.* Do not use cables as a screed. This fill coat shall be leveled with a trowel, rod or darby to fill any low spots or to remove any high ridges, etc. The fill coat shall be "toothed" to provide a key for the finish coat, by the use of a serrated darby or by lightly brooming prior to set. *The average thickness of the fill coat should be* 3/16″. After the fill coat has developed sufficient suction, a finishing coat of RED TOP Radiant Heat Plaster shall be applied to provide a total thickness of ¼″. Fill all voids and imperfections. Final trowel when the surface has become firm. Avoid using edge of trowel during final troweling.

Use water sparingly. Do not over-trowel. Always work to a wet edge. Avoid drying joinings.

c. Option for Sand Float Finish. Application of the fill coat shall not be altered. The finishing coat shall have (up to 20) lb. of clean silica sand per 80-lb. bag of RED TOP Radiant Heat Plaster. (*Note: Specify quantity depending upon texture desired.*) The quantity of sand added per bag shall be consistent. Application of the sand float finish shall be the same as outlined for the trowel finish, except that when it has become firm, but unset, it shall be floated to the desired texture, using a sponge, carpet, or other float. Use water sparingly.

UNITED STATES GYPSUM

ceilings **b**

THERMALUX System/Wood Framing

ELECTRIC RADIANT HEATING

1526

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
1 hr.	THERMALUX elect radiant heated ceiling—2″ nom wd sub & fin flr—2x10 wd joist 16″ o.c.—½″ THERMALUX htg panels & filler panels (both Type C core) att with spec insul nails 6″ o.c.—¼″ THERMALUX fin panels lamin over base panels—joints fin clg wt 3	UL Des 42-1 hr (f)	N/A		clg matls 38 (excl htg syst costs)	Completely integrated USG system, including controls. More uniform heat, lower operating temps. than with cable systems	b-1526

description

THERMALUX is a highly efficient electric heating system that combines the superior qualities of laminated gypsum board ceilings with the custom comfort, cleanliness, quiet, and trouble-free performance of electric radiant heat. Most significant in the assembly is a patented heating panel consisting of a heating element on an inert, incombustible gypsum board base. These thermostatically controlled panels provide the exact amount of heat needed for comfort while operating at lower temperatures, and consequently lower costs, than other types of electric radiant heating.

In this system THERMALUX Heating Panels and Filler Panels are attached to wood joists or furring with insulated nails spaced 10″ o.c. (6″ o.c. for fire-rated construction).

Electric power for the THERMALUX System is supplied by a standard branch circuit in each room. Any branch circuitry conforming to code regulations may be used between the disconnect device and the lead-in junction box. The power circuit is installed in the wiring recess and attached to electrode clips which are connected to the panels.

After the system is tested for proper installation and performance, a ¼″ thick high-density THERMALUX Finishing Panel is laminated to the base layer panels with special THERMALUX Contact Adhesive. The ceiling is finished with THERMALUX formulated PERF-A-TAPE* Joint System and standard decorating materials.

The THERMALUX Electric Heating System is approved by Underwriters' Laboratories, Inc., conforms to the National Electrical Code and meets Federal Housing Administration standards. Installation is by licensed THERMALUX contractors.

function and utility

An economical, incombustible, safe heating system for use in virtually every type of new construction or in remodeling —wherever quality permanent heating and the finest ceiling construction are required. In the THERMALUX Heating System these additional features are offered:

Design Freedom—Being part of the ceiling, THERMALUX permits complete freedom in placement and use of walls and in interior decoration.

Comfort—Quiet, uniform draft-free radiation of warmth is provided. Each room contains its own heating system and control permitting desired selection of comfort level.

Economy—Saves space and original equipment costs. Low-cost materials erect quickly using accepted installation methods. Low operating costs, virtually no maintenance and reduced cleaning and redecorating costs provide continuous savings over other heating systems.

Time Proven and tested through years of research and hundreds of jobs, THERMALUX Electric Heating System installations are warranted for 25 years.

limitations

1. THERMALUX Heating Panels must be attached only to wood framing or furring with THERMALUX insulated nails.
2. Max. frame spacing: 24″ o.c. (16″ o.c., fire-rated const.).
3. Not recommended as an acoustical tile base.

components

Components used in the THERMALUX Electric Radiant Heating System have been designed to meet rigid U.S.G. requirements and are coordinated to provide superior-quality radiant heated ceiling construction.

THERMALUX Heating Panels consist of four parts: gypsum board, asbestos insulation, a large area resistor, and ½″ wide copper electrodes located at least 1″ from the panel edge.

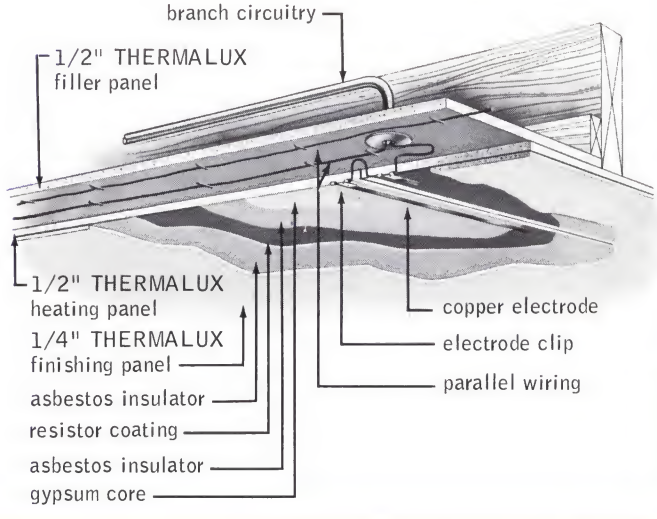
THERMALUX Heating panels are designed for 120-volt AC-DC operation at 115° F. temperature or lower and must be connected in parallel. At the design voltage, current input is 0.125 amp/sq. ft., heat output is 15 watts/sq. ft. (nominally 50 btu/sq. ft./hr.). The table below gives the electrical properties of individual panels.

The Heating Panels, manufactured from regular gypsum board or from special fire-rated "Type C" board, are ½″ thick, 4′ wide and available in lengths up to 12′. Two types are available: A-60-48.48 with the heating element over the entire area, and A-30-24.48 with the element over one-half the area for use when narrow panels are needed. Panels are readily cut to exact length on the job or easily cut out for installation of lighting. (*Components continued, page 3*)

THERMALUX heating panels—electrical properties

heated area size (ft.)	area (sq. ft.)	heat output watts	heat output btu/hr.	current req'd (amps)
2x10	20	300	1000	2.5
2x12	24	360	1200	3.0
4x10	40	600	2000	5.0
4x12	48	720	2400	6.0

Note: Special sizes available on order. Max. length: 16 ft.



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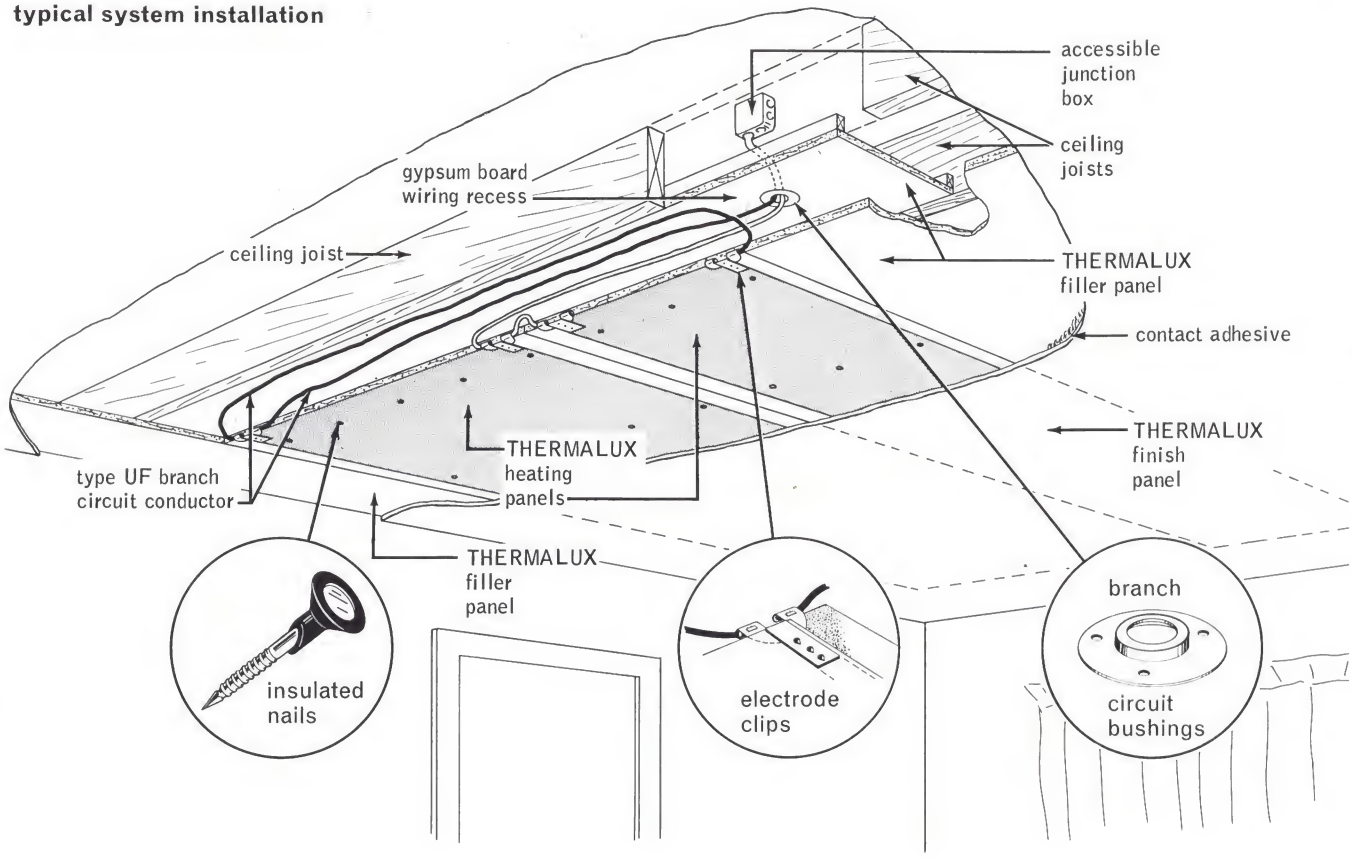
A.I.A. File No. 30-C-4.4/20-B-2

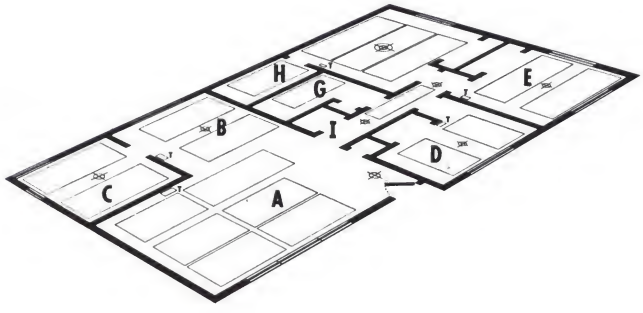
*Reg. U.S. Pat. Off.

details

typical system installation



planning installation
reflected ceiling plan



typical THERMALUX system design data

	room	heat loss, btu/hr. (1)	heating panel, sq. ft.	total wattage	current input, amps	branch circuit size (2)
	1	2	3	4	5	6
A	Living	8446	166	2490	21.0	2 Wire 30A—No. 10
B	Dining	2907	57	855	7.2	3 Wire 2-20A—No. 12
C	Kitchen	3815	75	1125	9.4	Same Circuit with Room B
D	Bedroom	2958	58	870	7.3	2 Wire 20A—No. 12
E	Bedroom	4080	80	1200	10.0	2 Wire 20A—No. 12
F	Bedroom	5508	108	1620	13.5	2 Wire 20A—No. 12
G	Bath	1122	22	330	2.8	2 Wire 20A—No. 12
H	Bath	1326	26	390	3.3	Same Circuit with Room G
I	Hall	663	13	195	1.7	Same Circuit with Room D

(1) Based on 80° F. Design Temperature differential, National Mineral Wool Assn. insulation standards for electrically heated homes, and typical plan (left), of 1,280 sq. ft. house.

(2) Branch Circuit Size and Current Carrying Capacity based on 80% load limit in accordance with Articles 210-23b and 310-12 of the National Electrical Code.

components (*continued from page 1*)

THERMALUX Filler Panels are used as a base layer in areas where heating is not required and in wiring recesses. Available in ½″ thick, 4′ wide panels with regular or fire-rated "Type C" gypsum board core and in lengths up to 12′.

THERMALUX Finishing Panels, specially designed for superior heat transmission and radiation, are ¼″ high-density gypsum panels, 4′ wide, in lengths up to 12′. Used as face layer ceiling panels.

Insulated Nails, with a nylon sleeve, must be used to attach Heating Panels to wood framing.

Branch Circuit Bushings, designed to fit all standard types of raceway/wiring systems, serve as wiring recess entrance for branch circuit conductors.

Electrode Clips are crimped on branch circuit conductors and then positively attached to the copper electrode on installed heating panels.

Finishing Materials required are (1) **THERMALUX Contact Adhesive,** specially formulated for heat resistance, used to laminate gypsum panels; (2) **THERMALUX formula PERF-A-TAPE Joint System** for fine quality finished joints.

Temperature Controls are low-voltage thermostats and silent thermal relays designed to provide quick response and optimum comfort control.

Insulation—THERMAFIBER* Insulating Wool Blankets or Blowing Wool are used to provide Installed Thermal Resistance according to NMWIA All-Weather Comfort Standards—Ceilings, R-24; walls, R-11; floors, R-13. See USG Insulating Wool Product Folder for more information.

Electrical Materials are standard products selected according to local regulations and practice.

specifications

notes to architect

1. *Advance planning of THERMALUX Heating Systems will assure economical installations and satisfactory performance. The building should be insulated with THERMAFIBER Insulating Blankets or Blowing Wool in accordance with National Mineral Wool Insulation Assn. recommendations concerning insulating value, installation methods, venting and vapor barriers for electrically heated buildings. The heat loss for each room and the entire building should be calculated by a method such as recommended by the American Society of Heating, Refrigeration & Air Conditioning Engineers.*

2. *The following specifications cover application of the THERMALUX Electric Radiant Heating System. Appropriate references should be made in the electrical, insulation and walls and ceilings portions of the specification calling attention to work required by these contractors that appears in this specification.*

3. *To retain maximum sound isolation, the integrity of the ceiling should not be voided by openings so as to create sound leaks.*

4. **Wood Framing Requirements**—*Wood framing meeting the following minimum requirements is necessary for proper performance.*

   a. *Framework shall meet the minimum requirements of FHA and local building codes.*
   b. *Framing members shall be straight, true, of uniform dimension, and framing shall be properly aligned.*
   c. *All framing lumber shall be of a good grade for the intended use, and 2″x 4″ nominal size or larger shall bear the grade mark of a recognized inspection agency using grading rules for lumber recommended to American Lumber Standards Committee.*
   d. *All framing lumber shall have a moisture content not in excess of 15 % at the time of heating panel application. Use of kiln dried lumber for joists is recommended.*
   e. *Extremely hard (dense) or soft framing members should not be used for attachment of panels.*

5. *The THERMALUX Heating System may be installed in buildings with steel framing and/or concrete ceilings. In steel-framed buildings wood furring should be installed for the application of THERMALUX Electric Heating Panels. The furring, of 2″ (nom.) lumber, should be spaced 16″ or 24″ o.c. Minimum size furring should be 2″x 2″ stock, with exact size (2x3, 2x4, etc.) determined by span between metal joists. Furring should be attached to joists in such a manner that the insulated nails used to apply THERMALUX Electric Heating Panels will not contact any metal.*

In buildings with concrete floor/ceiling slabs, wood furring should be installed on the underside of the concrete ceiling for application of THERMALUX Electric Heating Panels. Furring should be 2″x 2″ or larger spaced 24″ o.c.

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

scope

The contractor doing the work of this section shall be responsible to furnish all labor, materials and equipment to completely install the THERMALUX Electric Heating System as manufactured by the United States Gypsum Company, and as herein described.

The calculation of heat loss and the design of the THERMALUX Heating System shall also be a part of this contract.

general conditions

In cold weather the building shall be heated during the application of the THERMALUX Heating System to maintain a uniform temperature in the range of 45° F to 70° F., and ventilation shall be provided to eliminate excessive moisture.

All materials, as specified below, shall be delivered to the job in original unopened containers or bundles, stored in a place protected from exposure to the elements and from damage by tampering.

The installation and application of all THERMALUX materials shall be in accordance with the latest printed directions of the United States Gypsum Company.

Appropriate blocking for wiring recesses and provisions for proper installation of heating branch circuits and temperature and humidity controls shall be provided.

materials

See USG product folders in this series:

Joint Treatment Folder for Joint Treatment Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. Ceiling Panel—THERMALUX Finish Panel, tapered edges, ¼″ thick, 4′ wide—lengths as required.
b. Electric Heating Panel—THERMALUX Heating Panel, ½″ thick, 4′ wide (regular) (Type C) core—lengths as required.
c. Filler Panel—THERMALUX Filler Panel, ½″ thick, 4′ wide (regular) (Type C) core—lengths as required.
d. THERMALUX Insulated Nails.
e. THERMALUX Branch Circuit Bushings.
f. THERMALUX Electrode Clips.
g. Finishing Materials
   —1. THERMALUX Contact Bond Adhesive.
   —2. THERMALUX formula Ready-Mixed PERF-A-TAPE Joint System.

*Reg. U.S. Pat. Off.

h. Temperature Controls—THERMALUX 820-E low voltage thermostats and THERMALUX silent thermal relays.
i. Humidistat shall provide a single-pole double throw control at low or line voltage (by others).
j. Exhaust fan shall control humidity (by others).
k. Insulation—THERMAFIBER Insulating Blankets or Blowing Wool (specify from Insulating Wool Products Folder).
l. Electrical Materials—junction boxes, branch circuits, disconnect devices, connectors and other necessary components to complete the electrical system shall all be standard products, manufactured and distributed nationwide. All electrical components for branch circuits shall be selected according to local regulations and practice and installed in conformance with the National Electrical Code.

installation

Electrical power shall be supplied to the THERMALUX Electric Heating System by standard heating branch circuits. The choice of raceway system shall be governed by preference and local code regulations and shall be installed in conformance with the National Electrical Code.

Branch circuits for supplying power to the THERMALUX Electric Heating System shall be designed to carry specific heating loads in accordance with Articles 210-23b, 310 and 422-47 of the National Electrical Code (1962 Version).

A disconnect device shall be provided to protect conductors and equipment from current overload. The feeder and heating circuits for the THERMALUX System shall be connected independently of electrical circuits for other purposes.

THERMALUX electric heating panels

The THERMALUX Electric Heating Panels shall be installed (parallel) (perpendicular) to ceiling framing members with insulated nails spaced 10″ o.c. (6″ o.c. for fire-rated construction). The nails may be driven in any part of the panels except through the ½″ wide copper electrodes. A 1″ wide clear area at panel edges is provided for nailing. Recommended clearance of nails from edge of panels is ⅜″. The panel heating element shall not contact any grounded metal devices or combustible materials. Filler panels shall be installed in ceiling area where heating panels are not required. A wiring recess shall be formed so that power connections to heating panels are completely enclosed in incombustible, electrically nonconductive gypsum board.

When necessary, heating panels may be cut to length or cut to width only in a non-heating area.

When Heating Panel is adjacent to stairwells, hatchways, skylights or soffits, which create "outside" corners, the SHEETROCK gypsum board installed in the vertical wall plane shall be at least ½″ thick and cover both the Heating Panel and Finish Panel edges. The corner shall be protected with PERF-A-BEAD* reinforcement and PERF-A-TAPE Compound.

Panel layout shall be made so that Panels are not installed with ends directly butted, or wired in series. Wiring recess shall be located either at the center with heating panels wired to both sides or at end of panels with connections to one side.

lighting fixtures

Lighting fixtures, other electrical devices and openings shall be installed by positioning the THERMALUX Electric Heating Panels so that the fixtures are preferably located in a strip of filler panel. However, fixtures may be located within a heating panel by removing a section between electrodes. Clearances to be observed between fixtures and openings and electrically energized parts of panels shall be at least 8″ from lighting fixtures, outlet boxes and junction boxes, and 2″ or more from ventilating openings and other such openings in the ceiling, as specified in Article 422-50 of the 1962 National Electrical Code and manufacturer's directions. Cutouts must be spaced at least 6″ from panel ends, and 24″ or more apart. Limit number of cutouts to one in panels up to 8′ in length, and two cutouts in longer panels.

electrical connections

The THERMALUX Branch Circuit Bushing shall be provided for the branch circuit wiring to enter the wiring recess in the ceiling. The bushing shall be threaded onto a standard ½″ raceway fitting and secured to wiring recess with screws.

Electrode clips shall be used to connect branch circuit conductors to upper electrodes in the heating panels. The clips shall be pressure-fitted to the conductors using standard terminal pliers. The clip shall then be slipped onto a corner of the electrical resistance element which has been lifted from the gypsum base of the heating panel; the corner tab of heating circuit conductors stapled into position in the wiring recess.

inspection, testing and control

Electrical inspection and testing of the THERMALUX Electric Heating System shall be done after wiring connections are completed but before THERMALUX Finish Panels are installed. All circuits must be energized to assure that heating panels will function properly. The actual amperage of the circuit measured with an ammeter, shall correspond with the calculated amperage demand based on 0.125 amp per square foot of heating panel installed.

THERMALUX finish panels

THERMALUX Finish Panels shall be firmly laminated to the THERMALUX Electric Heating Panels and THERMALUX Filler Panels with THERMALUX Contact Bond Adhesive. The entire ceiling shall be impacted with a rubber mallet to assure complete bond and positive erection. All joints in the THERMALUX Finish Panels shall be treated with THERMALUX formula of Ready-Mixed PERF-A-TAPE Joint Compound and PERF-A-TAPE Reinforcing Tape per manufacturer's directions.

UNITED STATES GYPSUM

including exposed grids

ceilings **b**

AURATONE* Suspension Systems

ACOUSTICAL PANELS & TILE

1546

A.I.A. File No. 39-B-1

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
3 hrs. (beam 5 hrs.)	AURATONE FIRECODE ⅝"x24"x48" acoust clg panels in Susp Exp Grid Syst—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2½" conc on cellular stl flr clg wt 1.2	UL Des 65-3 hr (f)	40 to 44		clg matls 72	See Sound Control Products Folder for STC values of various patterns	b-1546
3 hrs. (beam 4 hrs.)	AURATONE FIRECODE ¾"x12"x12" acoust clg tile on Concealed Z-Spline Syst—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2½" conc deck on cellular stl flr clg wt 1.2	UL Des 59-3 hr (f)	40 to 44		clg matls 112	See Sound Control Products Folder for STC values of various patterns	b-1546
2 hrs.	AURATONE FIRECODE ⅝"x24"x48" acoust clg panels in Susp Exposed Grid Syst—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—1½" PYROFILL gypsum conc roof deck with ½" SHEETROCK formbd over bar joist clg wt 1.2	UL Des RC-6-2 hr (f)	40 to 44		clg matls 72	See Sound Control Products Folder for STC values of various patterns	b-1546
2 hrs.	AURATONE FIRECODE ⅝"x24"x48" or 24"x24" acoust clg panels in Susp Exposed Grid Syst—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2½" conc deck on riblath over bar joist clg wt 1.2	UL Des 72-2 hr (f)	40 to 44		clg matls 72	See Sound Control Products Folder for STC values of various patterns	b-1546
2 hrs.	AURATONE FIRECODE ⅝"x12"x12" acoust clg tile on Concealed Z-Spline Syst—clg interrupted—light fixt prot by 1¼" min wool bd—2½" conc on riblath over bar joist clg wt 1.2	UL Des 84-2 hr (f)	40 to 44		clg matls 105	See Sound Control Products Folder for STC values of various patterns	b-1546
2 hrs.	AURATONE FIRECODE ⅝"x12"x12" acoust clg tile on Concealed Z-Spline Syst—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2" THERMOFILL gypsum conc roof deck with ½" SHEETROCK formbd over bar joist clg wt 1.2	UL Des RC-13-2 hr (f)	40 to 44		clg matls 105	See Sound Control Products Folder for STC values of various patterns	b-1546
1½ hrs. (beam 3 hrs.)	AURATONE FIRECODE ½"x24"x48" acoust clg panels in Susp Exposed Grid Syst—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2" conc deck on riblath over bar joist clg wt 1.2	UL Des 18-1½ hr (f)	40 to 44		clg matls 65	See Sound Control Products Folder for STC values of various patterns	b-1546
1 hr.	AURATONE FIRECODE ⅝"x24"x48" or 24"x24" acoust clg panels in Susp Exposed Grid Syst—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2" nom wd sub & fin flr over 2x10 wd joist clg wt 1.2	UL Des 31-1 hr (f)	40 to 44		clg matls 72	See Sound Control Products Folder for STC values of various patterns	b-1546
incomb. class A	AURATONE ½"x24"x24" or 24"x48" acoust clg panels in Susp Exposed Grid Syst clg wt 1.0	authority ASTM E84-61T	37		clg matls 53	Basic incombustible lay-in acoustical panels; NRC varies with pattern	b-1546 f-1926
incomb. class A	AURATONE ⅝"x24"x24" or 24"x48" acoust clg panels in Susp Exposed Grid Syst clg wt 1.0	authority ASTM E84-61T	41		clg matls 60	Basic incombustible lay-in acoustical panels; NRC varies with pattern	b-1546 f-1926

description

AURATONE Ceilings are chosen over other systems because they provide balance in functional requirements—fire protection, superior sound attenuation, subtle beauty, accessibility—plus economy.

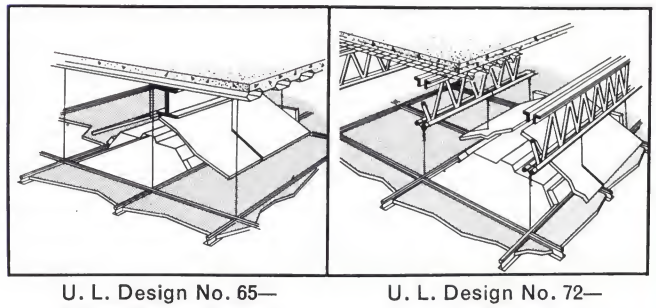
AURATONE Acoustical Panels and Tile are composed of prepared mineral fiber and lightweight perlite, formed by a special process. In these systems they are mechanically suspended (Mounting No. 7) from the overhead construction. AURATONE systems are installed by expert U.S.G. approved acoustical contractors.

Where the economy of large size panels and greater accessibility to plenum space is desired, AURATONE Ceiling Panels are installed by the lay-in method on any of several exposed inverted tee grid systems commercially available. These grids are made from steel or aluminum and may be fire-rated or non-rated.

The panels are available in either regular AURATONE or fire-rated AURATONE FIRECODE* grades, 24"x24" and 24"x48" sizes, ½" and ⅝" thicknesses, six different patterns (see page 2), and with painted or plastic-coated surface finish. See USG Sound Control Products Folder in this series for full product description and detailed sound control properties of AURATONE.

As tile, this material is available in regular AURATONE and fire-rated AURATONE FIRECODE grades, 12"x12", 12"x24" and 12"x48". Tile ceilings may be erected on the concealed or concealed accessible USG* Z-Spline Systems (see USG Folder on ACOUSTONE* Tile Suspension Systems for details).

(*continued on page 4*)



U. L. Design No. 65—
3 Hour (5-hour beam)

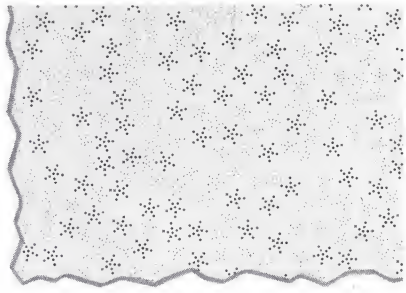
U. L. Design No. 72—
2 Hour

A.I.A. File No. 39-B-1

*Reg. U.S. Pat. Off.

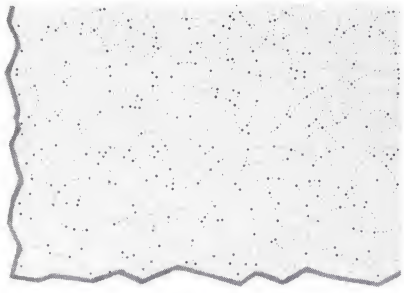
AURATONE patterns/details

Fissured

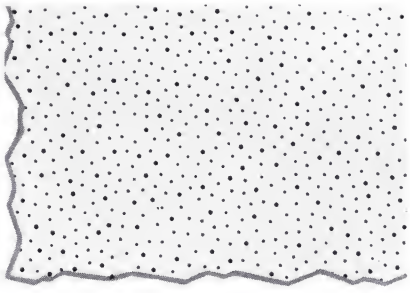


Star

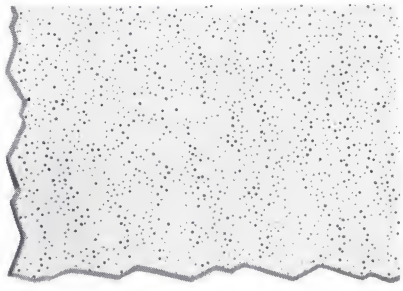
Striated



Trace



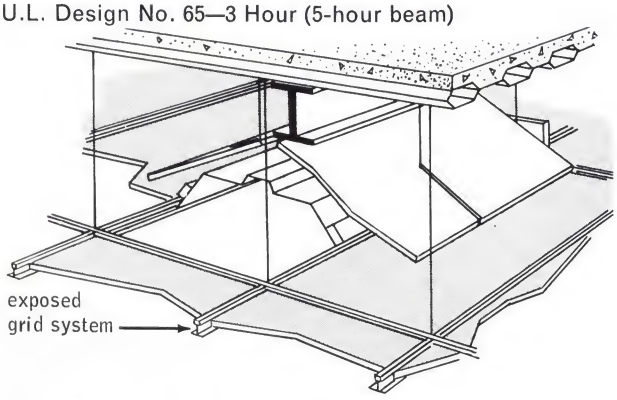
Random



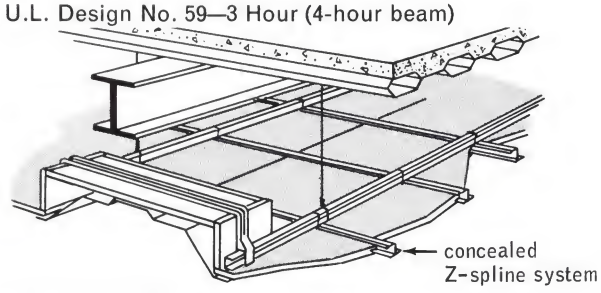
Pin-Perforated

concrete on cellular steel form with beam

U.L. Design No. 65—3 Hour (5-hour beam)

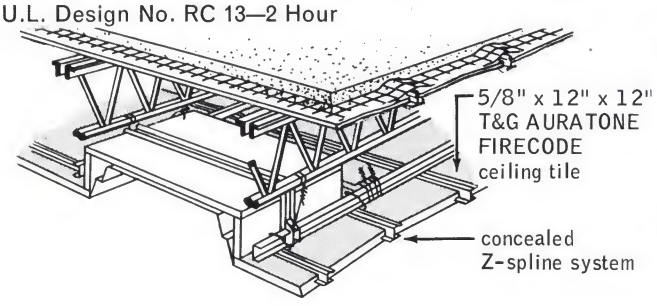


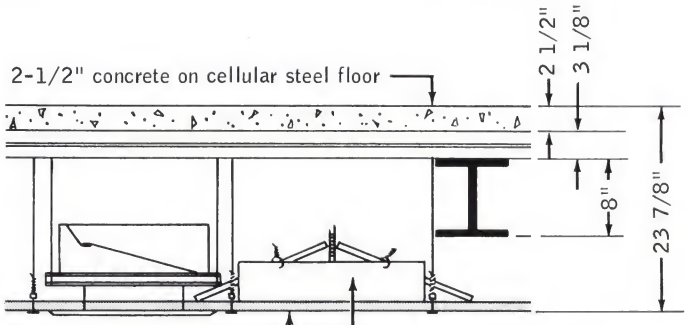
U.L. Design No. 59—3 Hour (4-hour beam)

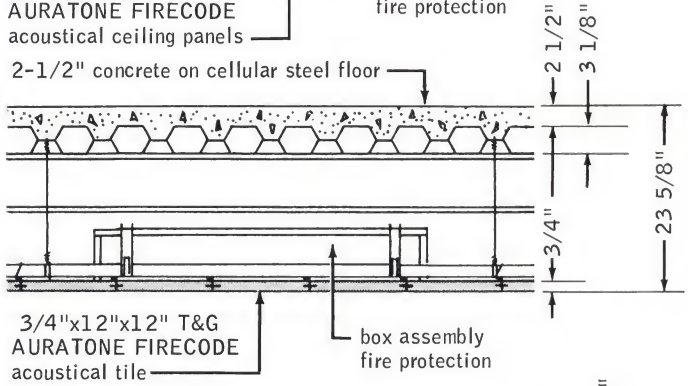


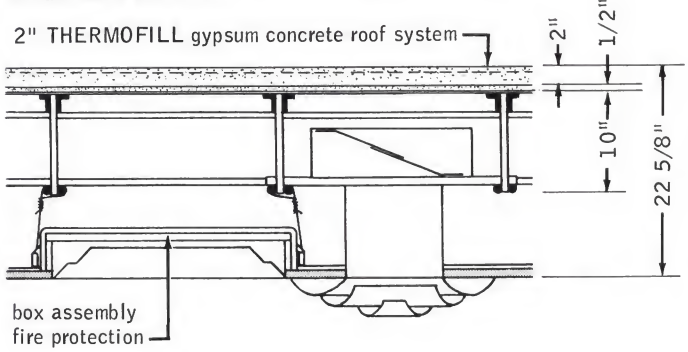
gypsum roof deck on bar joists

U.L. Design No. RC 13—2 Hour



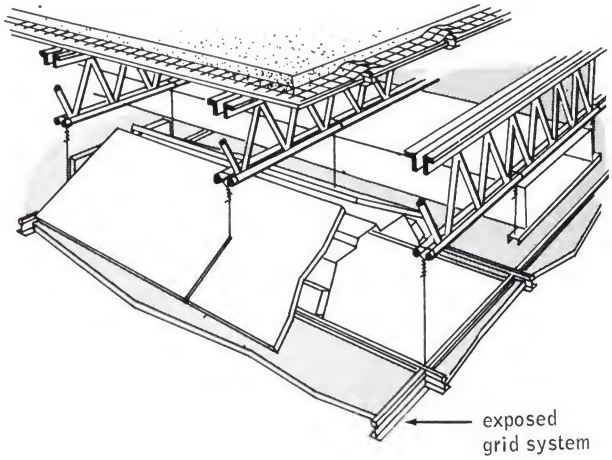


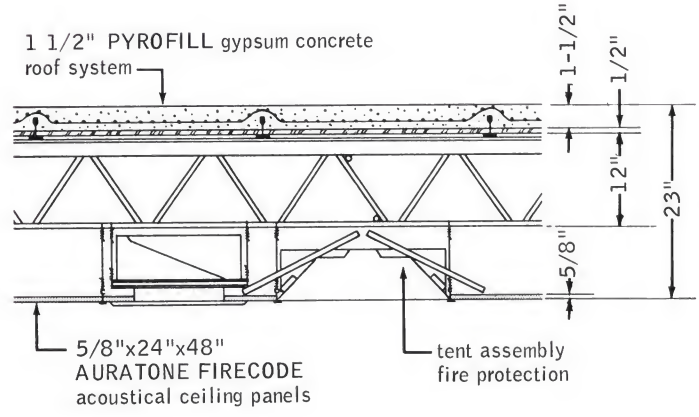




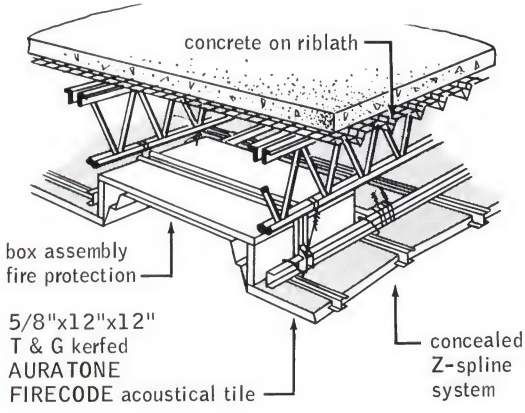
details

gypsum roof deck on bar joists
U.L. Design No. RC 6—2 Hour

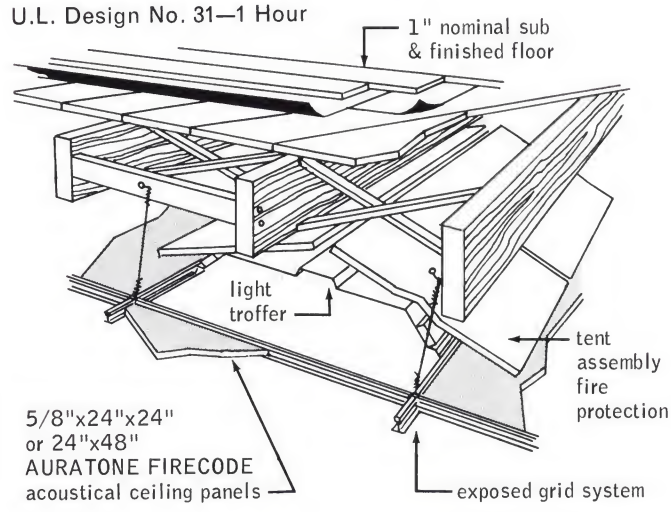




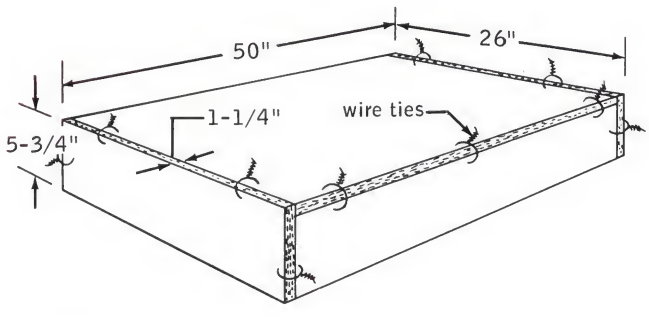
concrete on riblath over bar joists
U.L. Design No. 84—2 Hour



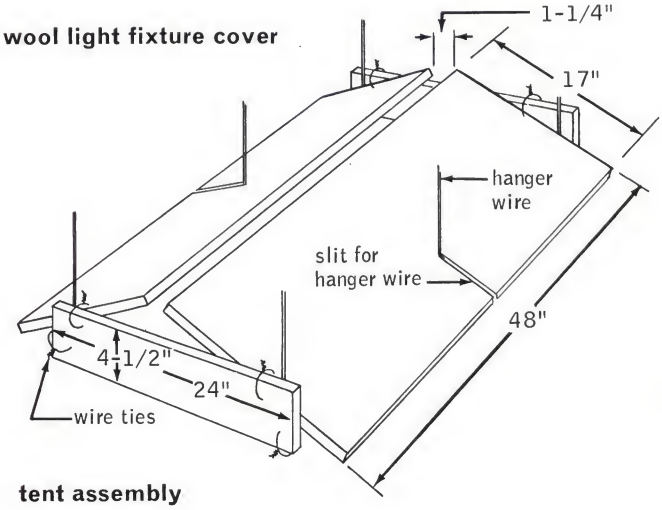
wood deck on wood joists
U.L. Design No. 31—1 Hour



light fixture protection shield —1¼" THERMAFIBER mineral wool light fixture cover



box assembly



tent assembly

*Reg. U.S. Pat. Off.

function and utility

Fire Resistance—Incombustible components provide up to 3-hour fire resistance ratings (5-hour beam) for floor-ceiling constructions (see table, page 1).

Sound Control—Sound absorption range of .60 to .75 in N.R.C. average, sound attenuation up to 43.7 db (11-freq. avg.) depending on pattern. Optimum balance of sound absorption and attenuation properties.

Light Reflectance—Class "A."

Versatility—Wide variety of patterns and sizes of acoustical panels and tile available. Adaptable for use in all types of new construction or alteration. Easily combined with lighting fixtures or with AIRSON* Air Distribution Systems to meet exact comfort requirements.

Economy—Large size AURATONE panels erect quickly; offer low maintenance costs.

limitations

1. AURATONE Acoustical Panels and Tile are not recommended for use where exposed to steam or very high humidity. They should not be used below wainscot height nor where exposed to impact, abrasion or tampering.

2. In ceiling constructions certain precautions concerning construction and ventilation are necessary for good performance (see Specifications).

specifications

notes to architect

1. *The spacing of hanger wires and channels are maximum and should not be exceeded. The grillage is designed to support the dead load of the acoustical ceiling and is not designed to support concentrated loads of mechanical equipment or workmen, particularly after the ceiling tile has been applied. Independently supported catwalks and equipment platforms should be provided.*

2. *Where contact, furred or suspended ceilings occur under roof construction, the plenum should be vented according to recommended engineering practice.*

3. *To retain maximum sound isolation, the integrity of the ceiling should not be voided by openings such as vents, light troffers, etc., so as to create sound leaks.*

4. *The THERMAFIBER* Rated Light Fixture Protection, a 1¼" thick semi-rigid mineral wool board shipped in a standard modules and job assembled using standard tie wire, is required for use on fire-rated construction in accordance with Underwriters' Laboratories specifications.*

5. *Allowable openings for light fixtures and diffuses are dependent upon the type of construction used. Refer to the specific test for this data.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Industrial Sound Control Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

general provisions

AURATONE units shall not be installed unless satisfactory closures for window and other openings are in place and roofs are tight. Temperatures in the working areas shall be well above freezing. Conditions during installation shall as closely as possible approximate those conditions which will exist when the building is occupied.

The recommendations for construction conditions found in the latest Acoustical Materials Association Bulletin shall apply.

materials

See USG Folder on Sound Control Products for technical information.

Acoustical Materials by the United States Gypsum Company shall be:

1. AURATONE Acoustical Ceiling Panels, square edge
   Type: (Regular) (FIRECODE)
   Size: (24"x24") (24"x48")
   Thickness: (½") (⅝")
   Pattern: (Fissured) (Random) (Striated) (Trace) (Star) (Pin-Perforated)
   Finish: (White) (Plastic coated)

2. AURATONE Acoustical Tile
   Type: (Regular) (FIRECODE)
   Size: (12"x12") (12"x24") (12"x48")
   Edge: (Beveled) (Kerfed T&G)
   Thickness: (⅝") (¾")
   Pattern: (Fissured) (Random) (Striated) (Trace) (Star) (Pin-Perforated)
   Finish: (White) (Plastic coated)

Systems for Application Shall Be:

1. Exposed Grid System by (specify manufacturer).

2. USG (Concealed) (Concealed Accessible) Z-Spline.
   Note: For complete specification see Acoustone Suspension Systems Folder.

installation

Grid suspension system and acoustical (panels) (tile) shall be installed in accordance with manufacturers' directions.

UNITED STATES GYPSUM

ceilings

b

ACOUSTONE* Suspension Systems

ACOUSTICAL TILE

1556

A.I.A. File No. 39-B-1

fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
2 hrs. (beam 2 hrs.)	ACOUSTONE 120 Fissured or MOTIF'D ¾"x12"x12" min acoust tile on Concealed Z-Spline Syst—clg interrupted —light fixt prot by 1¼" THERMAFIBER min wool bd— 2½" conc deck on cellular stl flr clg wt 1.3	UL Des 85-2 hr (f)	39 est		clg matls 112		b-1556
2 hrs.	ACOUSTONE 120 Fissured or MOTIF'D ¾"x12"x12" min acoust tile on Concealed Z-Spline Syst—2½" conc deck on riblath over bar joist clg wt 1.3	UL Des 41-2 hr (f)	39 est		clg matls 112		b-1556
1½ hr. (beam 3 hrs.)	ACOUSTONE 90 Fissured or MOTIF'D ¾"x12"x12" min acoust tile on Concealed Z-Spline Syst—2" conc deck on riblath over bar joist clg wt 1.3	UL Des 6-1½ hr (f)	47 est		clg matls 105		b-1556
1 hr.	ACOUSTONE 90 Fissured or MOTIF'D ¾"x12"x12" min acoust tile on Concealed Z-Spline Syst—2" nom wd sub & fin floor over wd joist 16" o.c. clg wt 1.3	UL Des 15-1 hr (f)	47 est		clg matls 112		b-1556
incomb. class A	ACOUSTONE "F" ¾"x12"x12" or 12"x24" min acoust tile on Concealed Z-Spline Syst	authority ASTM E84-61T	29 est		clg matls 83	Basic concealed spline acoustical tile system; several patterns available	b-1556 f-1926
incomb. class A	ACOUSTONE "F" ¾"x12"x24", 12"x36", or 12"x48" min acoust tile on Exp Z-Spline Syst	authority ASTM E84-61T	26 est		clg matls 83	Basic exposed spline acoustical tile system for accessibility	b-1556 f-1926

description

In these systems ACOUSTONE Mineral Fiber Acoustical Tile is mechanically suspended (mounting No. 7) by concealed or exposed USG® Z-Splines, special metal clips and wall finish channels to provide an economical, incombustible, rigid ceiling. The USG Z-Spline systems are suitable for use in all types of new construction or in remodeling to provide accessible attachment of acoustical ceilings to 1½" carrying channel grillage, steel bar or wood joists or wood furring strips. Flat metal, tee or angle splines provide full support across the Z-Splines and prevent breathing through the tile. Lighting and air conditioning fixtures are readily coordinated with this system.

ACOUSTONE Mineral Fiber Acoustical Tile for this assembly is available in several different types, sizes, patterns and finishes (see Specifications, page 7). ACOUSTONE "F", white, featuring a natural fissure texture, has 86% light reflectance and is available with either square or beveled edges. Variations of this texture such as ACOUSTONE Glacier provide sound absorption as high as .80-.90 N.R.C. A third dimension of light and shadow may be achieved by deviating from the flat ceiling with bold relief Vignette and Shadowline patterns of ACOUSTONE "F" MOTIF'D* ACOUSTONE is available in seven different basic relief patterns or in custom patterns to suit design requirements. Foil-backed ACOUSTONE "db" erected on the concealed Z-Spline system eliminates the need for extra backing and provides sound attenuation of 45.5 db, 11-frequency average. Fire resistance ratings for floor and ceiling assemblies up to 2 hours are available using ACOUSTONE 120 Mineral Acoustical Tile (see table above).

These systems are also ideally suited for use with AURATONE* Tile. See separate Systems Folder for detailed information on AURATONE Ceiling Panels and Tile. For complete data on ACOUSTONE and AURATONE types and styles, see separate USG Folder in this series on Sound Control Products.

function and utility

Acoustical ceiling systems serve to conceal mechanical and electrical equipment and services while providing beauty, comfort and sound control. The USG Z-Spline system with appropriate acoustical treatment meets these requirements and in addition offers these features.

Versatility—Adaptable for use in all types of new construction—commercial, institutional, industrial and residential—or in the remodeling or alteration of existing buildings. A great variety of patterns and textures of acoustical tile and panels are available to meet esthetic design requirements.

Fire Resistance—Assembled from incombustible components. Fire resistance ratings up to 2 hours for steel and concrete construction and 1 hour for wood frame construction have been established.

Sound Absorption—Wide range available up to .80-.90 N.R.C.

Sound Attenuation—Up to 45.5 db with foil-backed ACOUSTONE "db" which efficiently retards sound travel through the ceiling and over partitions.

Light Reflectance—Up to 87% with ACOUSTONE Finesse Tile.

Accessibility—Acoustical tiles are easily removed and replaced providing complete or partial accessibility to the plenum space.

Flexibility—Easily combined with lighting and air conditioning fixtures. For information on AIRSON* Air Distribution Systems, see separate USG Systems Folder in this series.

Economy—Few parts needed, resulting in fast, low-cost erection. Easily cleaned and spray or brush painted for low maintenance costs.

limitations

1. ACOUSTONE Mineral Acoustical Tile is not recommended for use where exposed to steam or very high humidity. It should not be used below wainscot height or where exposed to impact, abrasion or tampering.

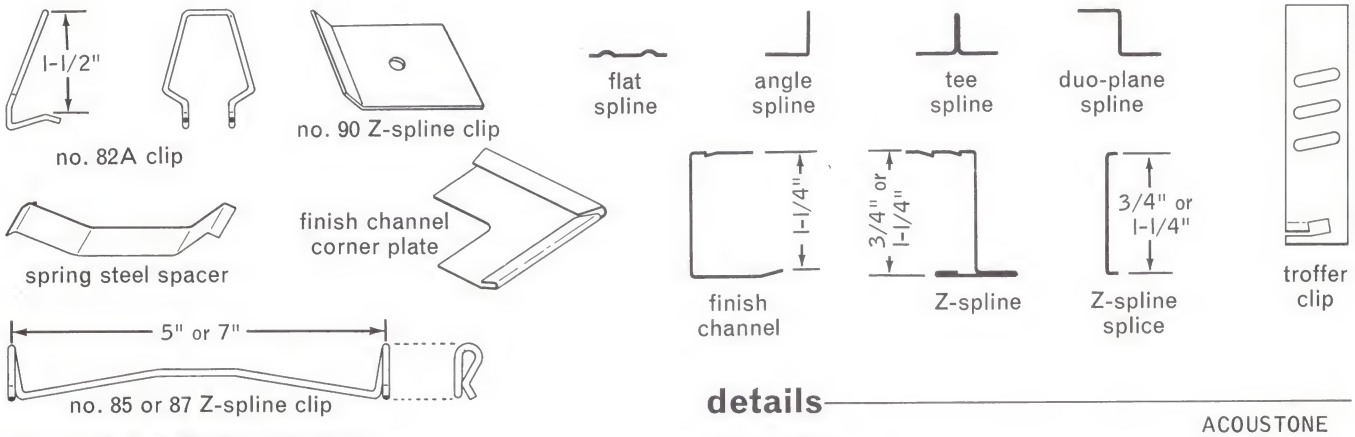
2. Limiting span, 1¼" USG Z-Spline: 5'.

3. In ceiling constructions certain precautions concerning construction and ventilation are necessary for good performance (see Specifications, page 7).

A.I.A. File No. 39-B-1

*Reg. U.S. Pat. Off.

components



concealed Z-Spline system

Z-Splines attached to 1½″ carrying channel grillage

This method offers an economical, simple, rigid construction and permits the use of flush joints where lighting conditions are not too severe.

This suspension method provides metal spline supports in kerfs along the four edges of each unit. Splines also act as a continuous seal to minimize air travel through the joints. Self leveling of the tile joints is assured since intersecting corners of four adjacent units are supported on the same member.

Z-Splines direct to bar joists

This method may be employed when bar joists are spaced a maximum of 5 feet o.c. The Z-Splines are attached direct to the bottom chord of the bar joist with the No. 87 clip. The saving gained by eliminating the 1½″ channel is often lost in "shimming" since bar joists seldom form a true ceiling plane. It is therefore suggested this method only be used where headroom is critical.

concealed accessible Z-Spline system

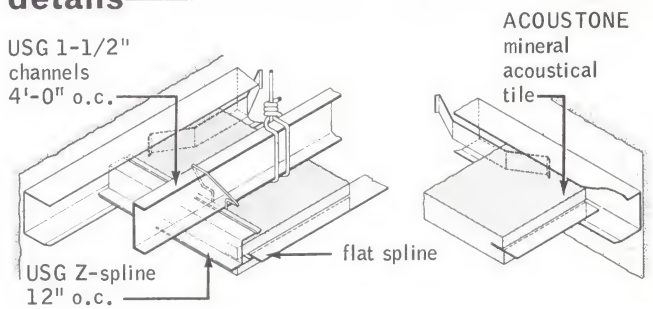
The concealed accessible system is a modified Z-Spline method designed to provide complete (or partial, where desired) accessibility to the plenum area above the ceiling. Modern architectural demands requiring use of the plenum for piping, electrical equipment, sheet metal work, and other mechanical devices have made accessibility a much desired feature of the acoustical ceiling.

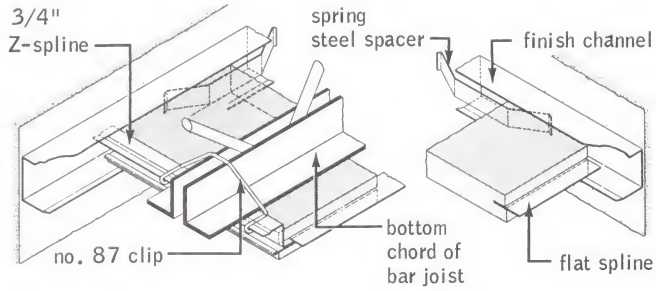
This system completely conceals the fact that tile are removable for access. The finished ceiling appearance is that of an ACOUSTONE "F" mineral tile ceiling with beveled edges. Due to the special characteristics of the system only bevel edge tile is recommended. It is further suggested that ¾″, 12″x24″ tile be used, although the system can accommodate ¾″, 12″x12″ tile as well.

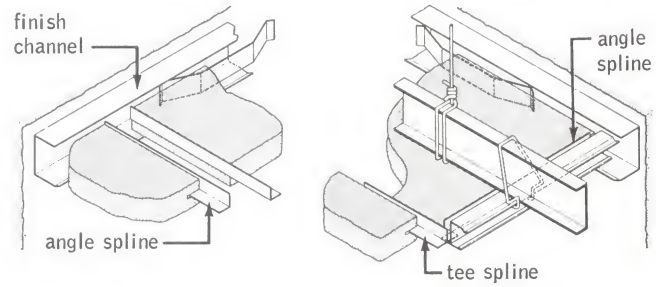
"E-Z-S" Z-Spline metal suspension system

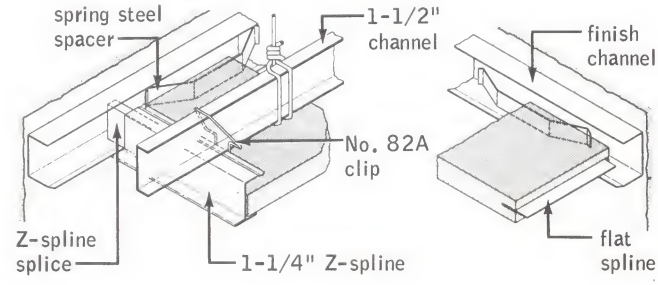
Because of its ease of installation, this method is economical and provides a low-cost acoustical ceiling with complete accessibility to the area above the ceiling. Any type lighting arrangement is easily adaptable to the E-Z-S Suspension System. Lighting troffers can be installed quickly and economically. Full advantage can be taken of the economy of gravity-held diffusers laid directly in the Z-Spline to replace equivalent area of ACOUSTONE tile. This permits maximum flexibility of lighting arrangement. See details, next page.

details



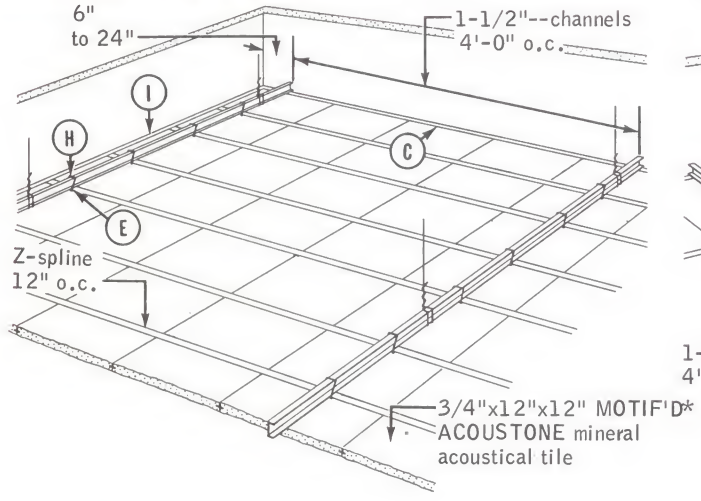




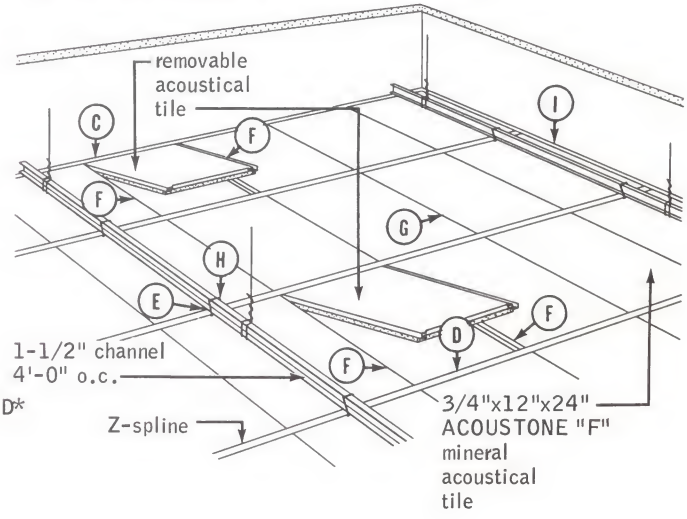


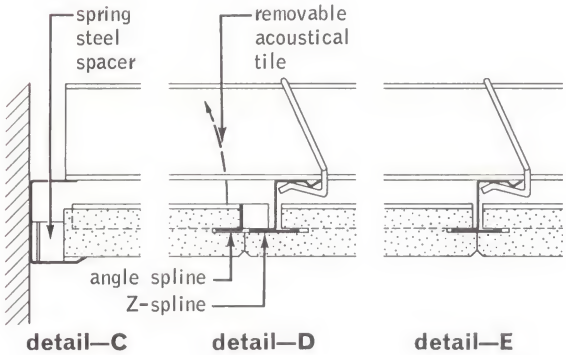
details

concealed Z-Spline system

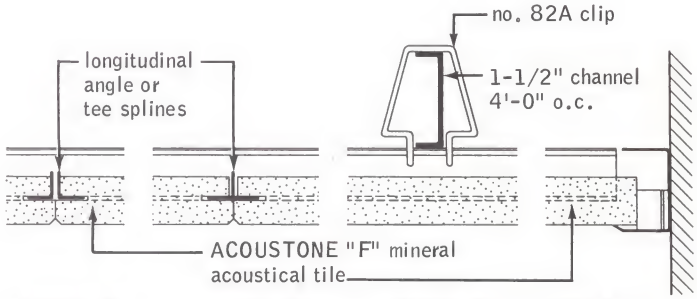


concealed accessible Z-Spline system



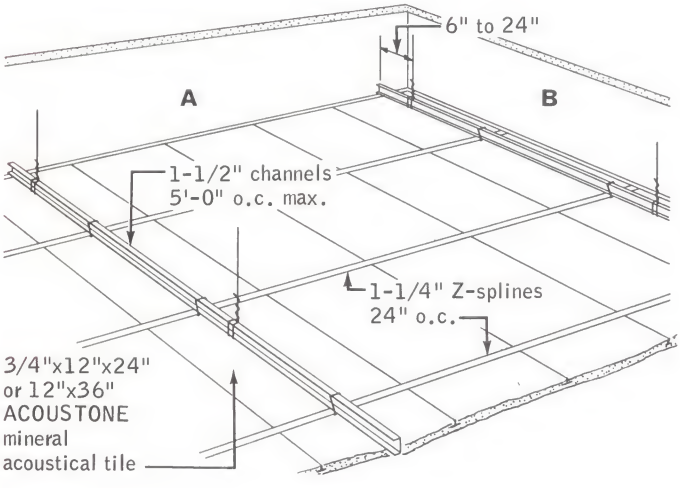


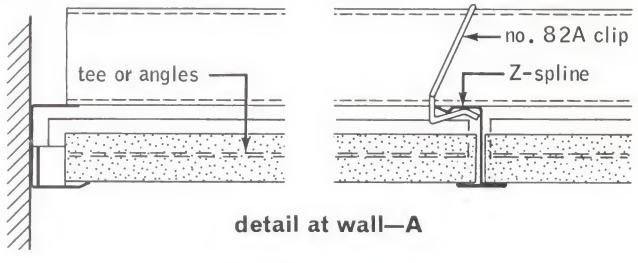
detail—C detail—D detail—E



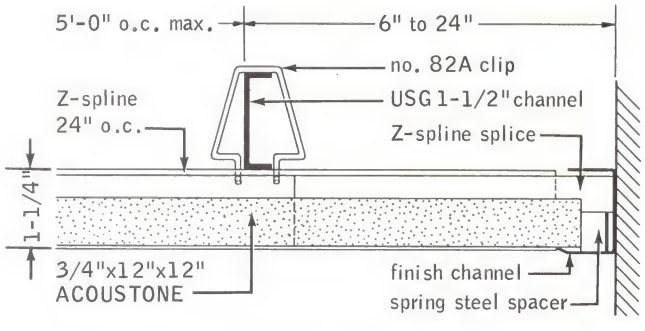
detail—F detail—G detail—H detail—I

"E-Z-S" Z-spline suspension system





detail at wall—A



detail at wall—B

*Reg. U.S. Pat. Off.

details

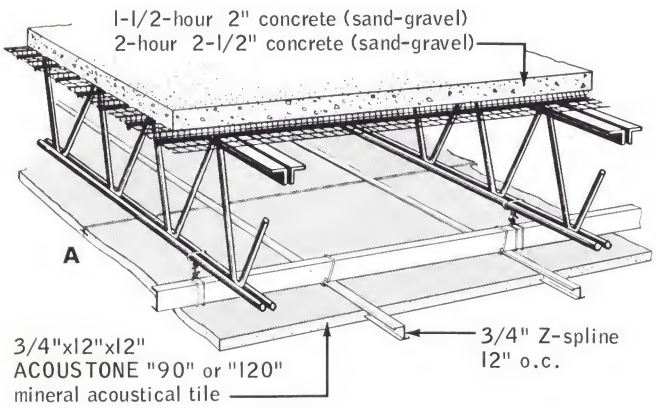
fire-rated construction

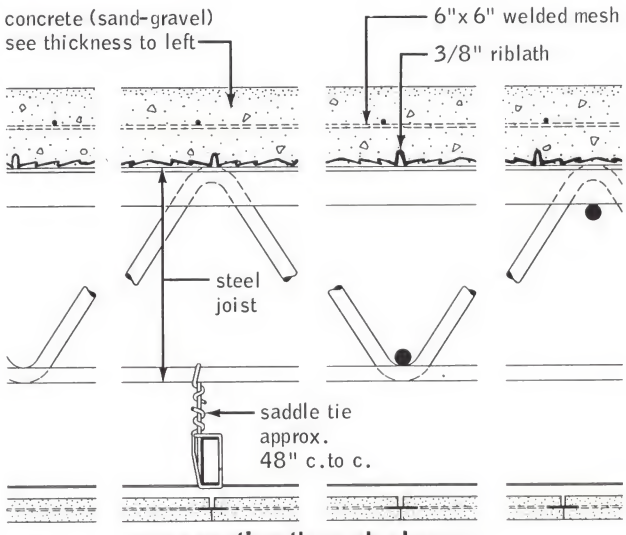
U.L. Design No. 41—2-Hour

ACOUSTONE 120 Mineral Acoustical Tile suspended on a standard concealed Z-spline system provides a 2-hour rating for bar joist and concrete floor (or roof) construction.

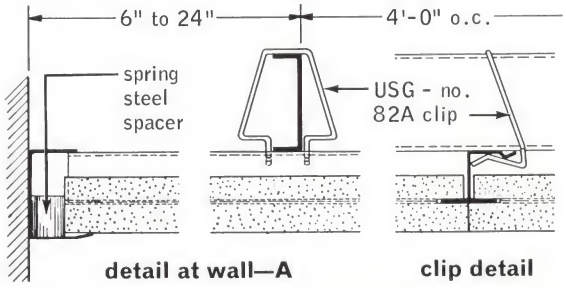
U.L. Design No. 6—1½-Hour

ACOUSTONE 90 Mineral Acoustical Tile suspended on a standard concealed Z-spline system provides a 1½-hour rating for bar joist and concrete floor (or roof) construction.





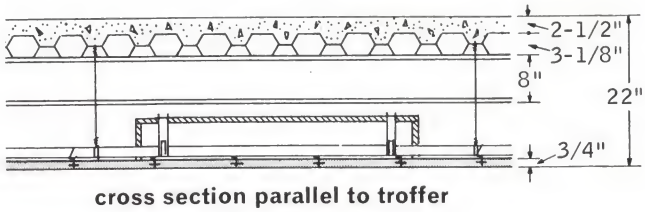
cross section through plenum



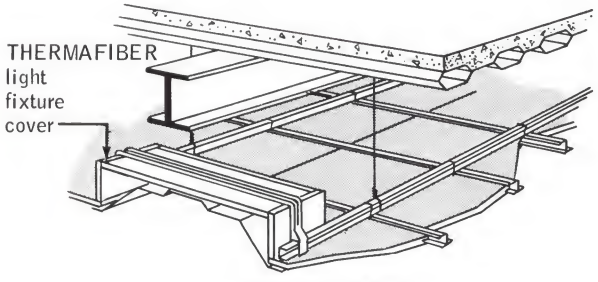
detail at wall—A clip detail

U.L. Design No. 85—2-Hour (2-hour beam)

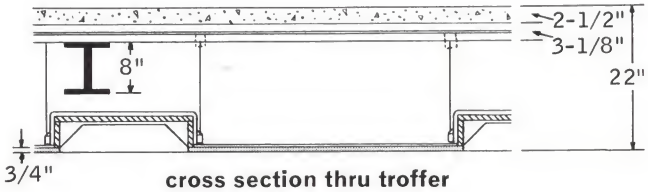
ACOUSTONE 120 Mineral Acoustical Tile suspended on a standard concealed Z-spline system provides a 2-hour rating for 8-in. steel beam (also rated 2 hours) and concrete floor (or roof) construction.



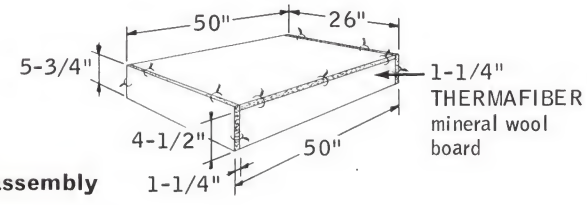
cross section parallel to troffer



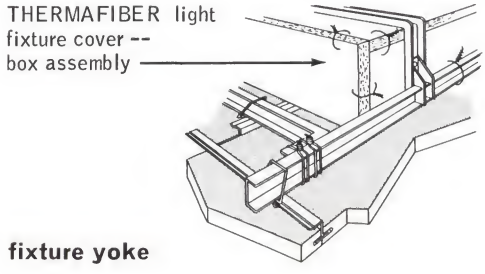
plenum detail



cross section thru troffer



box assembly



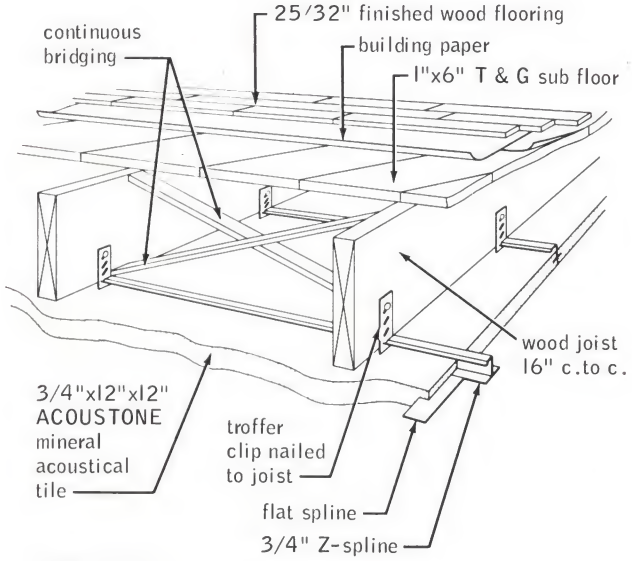
fixture yoke

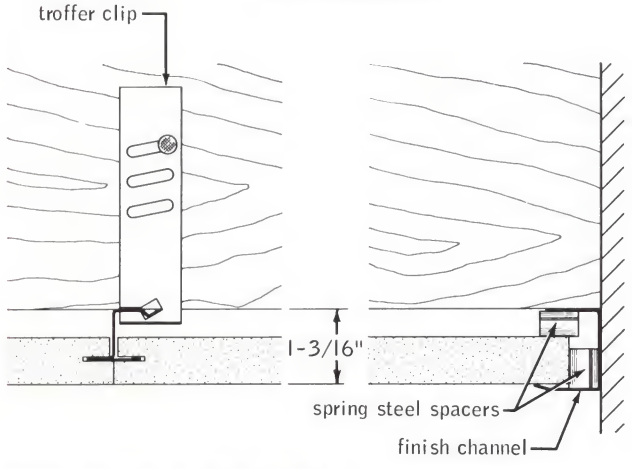
details

fire-rated wood frame construction

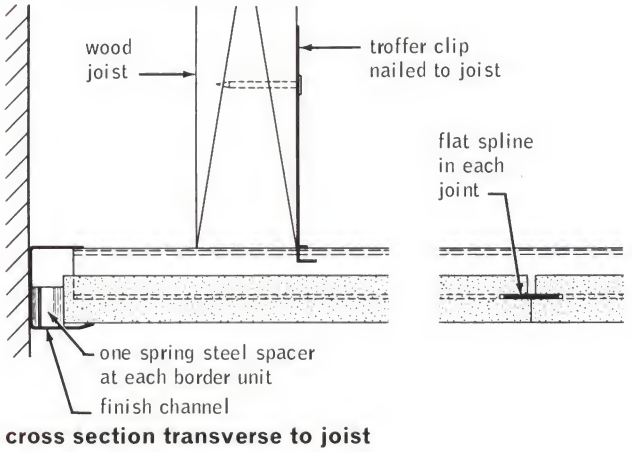
U.L. Design No. 15—1-Hour

ACOUSTONE* 90 Mineral Acoustical Tile suspended on a standard concealed Z-spline system provides a 1-hour rating for wood joist and deck (or floor) construction.





cross section parallel to joist

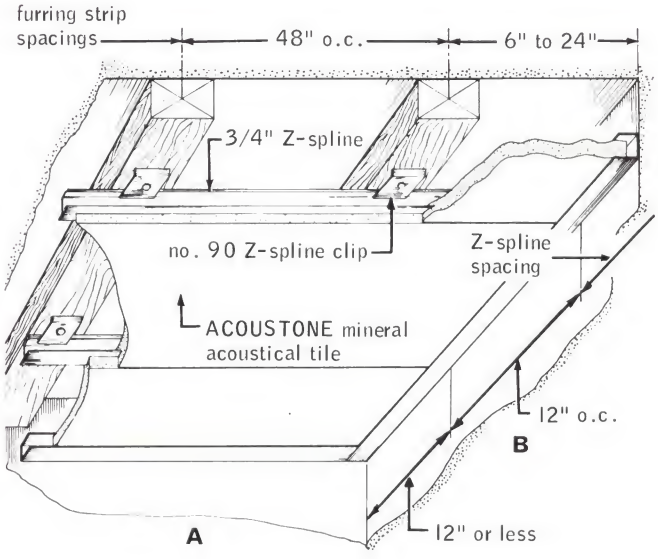


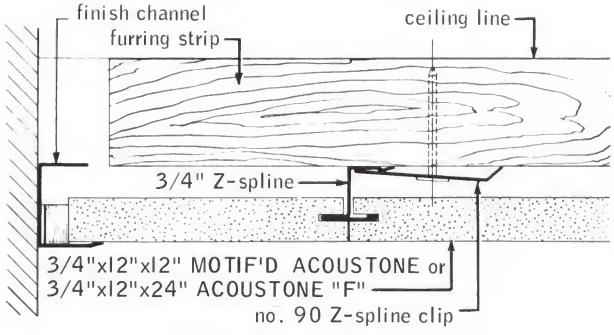
cross section transverse to joist

wood furring direct attachment of Z-Spline

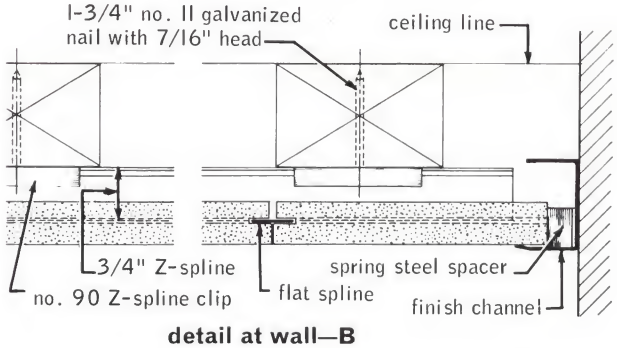
This method is particularly adaptable to existing ceilings where the surface is in such condition that it is impractical to attach ACOUSTONE tile by cementing.

This system is installed by nailing wood furring strips, maximum spacing of 4′ o.c., and attaching Z-Splines to the furring strips with the No. 90 Clip. The No. 90 Clip may also be used to attach Z-Splines directly to existing wood joists or to wood furring strips nailed to exposed concrete surfaces.





detail at wall—A

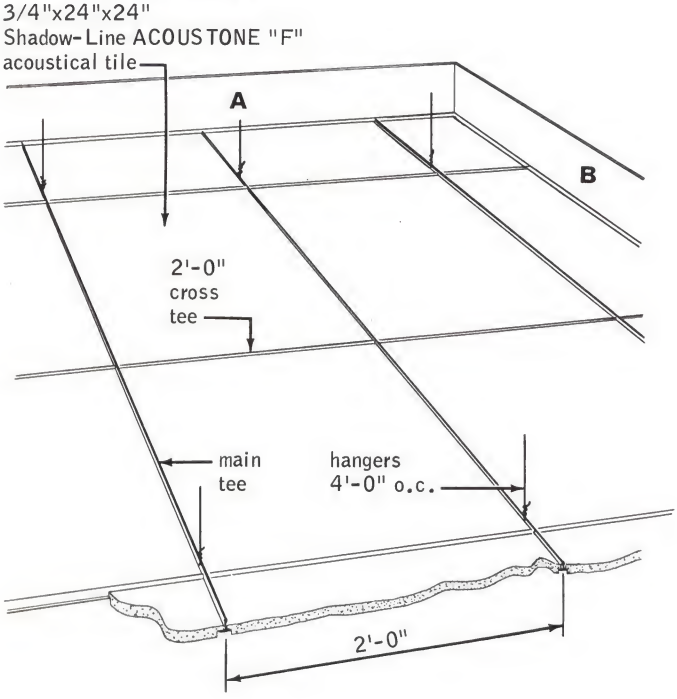


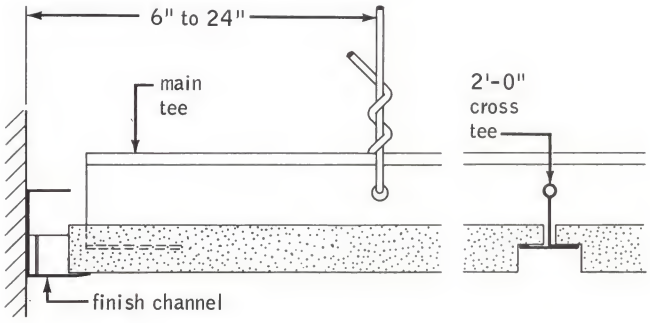
detail at wall—B

*Reg. U.S. Pat. Off.

details

Shadow-Line ceilings





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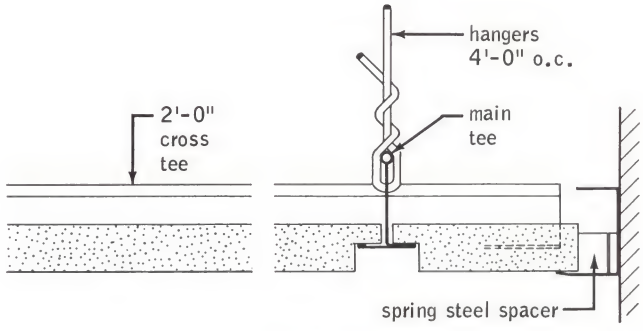
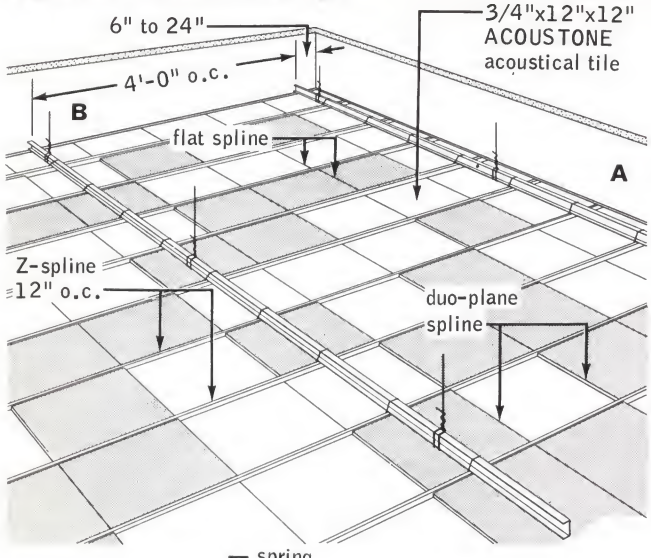
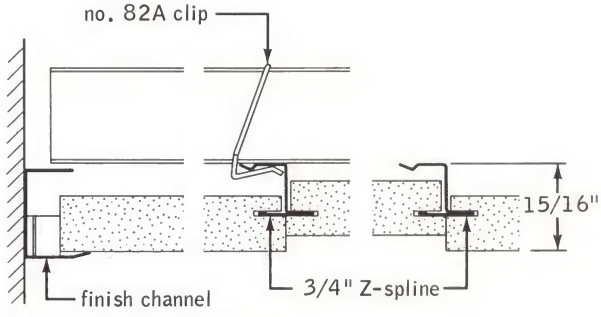


detail at wall—B

Vignette or Checker ceilings





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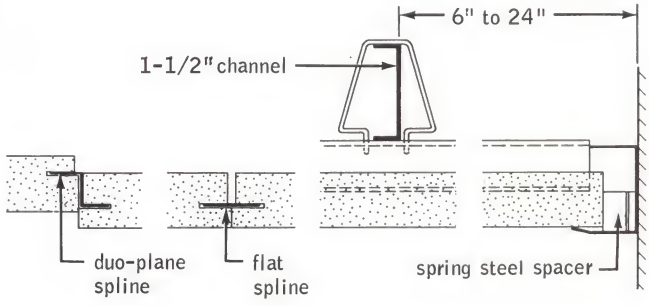

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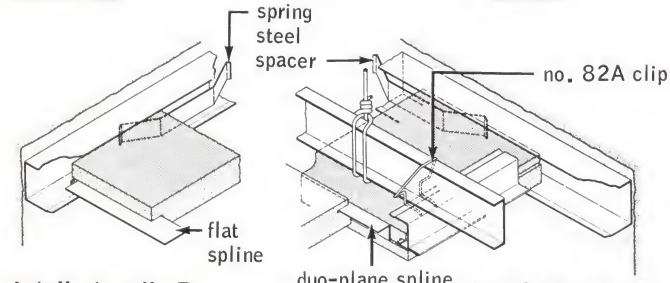


detail at wall—B **detail at wall—A**

specifications

notes to architect

1. *The spacing of hanger wires and channels are maximum and should not be exceeded. The grillage is designed to support the dead load of the acoustical ceiling and is not designed to support concentrated loads of mechanical equipment or workmen, particularly after the ceiling tile has been applied. Independently supported catwalks and equipment platforms should be provided.*

2. *Where contact, furred or suspended ceilings occur under roof construction, the plenum should be vented according to recommended engineering practice.*

3. *To retain maximum sound isolation, the integrity of the ceiling should not be voided by openings such as vents, light troffers, etc., so as to create sound leaks.*

4. *The THERMAFIBER* Rated Light Fixture Protection, a 1¼″ thick semi-rigid mineral wool board shipped in standard modules and job assembled using standard tie wire, is required for use on fire rated construction in accordance with Underwriters' Laboratories specifications.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Industrial Construction Products Dept., 101 So. Wacker Dr., Chicago, Ill., 60606.

general provisions

Bases to receive acoustical units and the units themselves shall not be installed unless satisfactory closures for windows and other openings are in place and roofs are tight. Temperatures in the working areas shall be well above freezing.

The area or room in which acoustical units are to be installed shall not be damp; i.e. plaster, terrazzo floor, etc. shall be previously installed and dry.

materials

See USG Product Folder in this series for technical information on Sound Control Products.

Acoustical Tile By the United States Gypsum Company Shall Be:

ACOUSTONE "F"—(White or Ivory)
- ¾″x12″x12″ (square or bevel edge)
- ¾″x12″x24″ (square or bevel edge centerscored)
- ¾″x12″x24″ (bevel edge centerscored for Concealed Accessible System)
- ¾″x12″x36″ (square edge)
- ¾″x24″x24″ nom. (square edge)

ACOUSTONE "db"
- See ACOUSTONE "F" sizes

ACOUSTONE "90" and "120"
- ¾″x12″x12″ (square edge)

MOTIF'D ACOUSTONE—(White or Ivory)
- ¾″x12″x12″ Pattern No. (2, 5, 10, 19, 33, 36, or 40)

ACOUSTONE Finesse
- See ACOUSTONE "F" sizes

ACOUSTONE Glacier
- ¾″x12″x12″ (square edge)
- ¾″x12″x24″ (square edge)
- ¾″x24″x24″ nom. (square edge)

Vignette ACOUSTONE "F"
- ¾″x12″x12″ (special kerfed edge)

Shadow-Line ACOUSTONE "F"
- ¾″x12″x24″ (special rabbeted edge)
- ¾″x24″x24″ (special rabbeted edge)

Base for Application Shall Be:

1½″ cold rolled carrying channel grillage supported by No. 10 ga. hanger wire.

Wood Grillage Shall Be:

2″x2″ or 2″x3″ wood nailing strips—straight grain, kiln dried and free from knots

1″x3″ wood furring strips—straight grain, kiln dried and free from knots

Systems for Application Shall Be:

USG Concealed Z-Spline for ACOUSTONE and MOTIF'D ACOUSTONE of 12″x12″ and 12″x24″ sizes.

- ¾″ USG Z-Spline
- Flat Spline of galvanized steel—for flush joints
- Duo-plane Spline—for offset joints
- Spring steel spacer
- USG finish channel and finish channel corner plate
- 82-A clips—to attach Z-Spline to 1½″ c.r. carrying channel
- 85 or 87 clip—to attach Z-Spline direct to bar joist
- 90 clip—to attach Z-Spline direct to wood furring

Concealed Accessible Z-Spline System for ACOUSTONE.

- ¾″ or 1¼″ Z-Spline
- T-Spline of galvanized steel
- Angle Splines—23½″ and 10 15/16″ of galvanized steel
- Finish channel and finish channel corner plate
- 82-A clips to attach Z-Splines to 1½″ carrying channels

E-Z-S Suspension System — for ACOUSTONE and MOTIF'D ACOUSTONE of 12″x24″, 12″x36″, 12″x48″, and 24″x24″ nom. sizes.

- 1¼″ Z-Spline painted white
- T-Spline of galvanized steel
- Angle spline of galvanized steel
- Spring steel spacer
- USG finish channel and finish channel corner plate
- 82-A clip—to attach Z-Spline to 1½″ (C.R.) carrying channel
- 85 or 87 clip—to attach Z-Spline direct to bar joist
- 90 clip—to attach Z-Spline direct to wood furring

*Reg. U.S. Pat. Off.

installation

Base—1½″ cold rolled channel grillage—No. 10 ga. hanger wires shall be securely attached at 4′ o.c. 1½″ carrying channels shall be tied to the hanger wires and shall be hung level at a maximum spacing of 4′ o.c. The 1½″ channel adjacent to an intersecting wall shall be placed not more than 12″ from the wall.

Wood Grillage—main members (2″x2″ or 2″x3″) shall be suspended not more than 36″ o.c. 1″x3″ furring strips shall be nailed in place not more than 12″ o.c.

metal suspension

Concealed Z-Spline Installation Method:

1. MOTIF'D ACOUSTONE
2. ACOUSTONE "F"

¾″ Z-Splines shall be attached 12″ o.c. and at right angles to:

a. Metal Grillage by No. 82-A clip

b. Bar Joist by No. 85 or 87 clip.

c. Wood Framing by No. 90 clip.

The tile shall be supported by inserting the Z-Spline flanges into the kerfed edges of the tile. Abutting edges shall be aligned by inserting steel splines into the kerfs of the transverse edges of the tile. Use flat spline for flush joints and duoplane spline for offset joints. ACOUSTONE finish channel moulding shall be provided at the wall intersections and spring steel spacers placed into the channel 12″ o.c. Finish channel corner plate shall be used at all exterior corners. At interior corners where channel is to continue, flanges shall be cut and the web bent to form corners, overlapping channel flanges.

ACOUSTONE F for Concealed Accessible System:

a. ¾″ or 1¼″ Z-Splines shall be attached 24″ o.c. and at right angles to the metal grillage by No. 82-A clips.

b. Accessible Tile—USG 7/16″x7/16″x23½″ Angle Splines shall be inserted in the kerf on each 24″ edge with both angles on one end extending ½″ beyond the edge to support the tile on the Z-Splines.

The 7/16″x10 15/16″ Angle Splines shall be inserted in the 12″ kerf which has the protruding angles. The tile is then installed by seating the opposite end of the tile in the Z-Spline and seating the protruding angles on the adjoining Z-Spline.

E-Z-S Z-Spline Metal Suspension Installation Method:

ACOUSTONE "F"

1¼″ painted Z-Spline shall be attached 24″ o.c. and at right angles to:

a. Metal Grillage by No. 82 clip.

b. Bar Joists by No. 85 or 87 clip.

c. Wood Furring or Framing by No. 90 clip.

¾″x12″x24″ tile shall be placed on top of the lower flange of the Z-Spline; Angle Splines or T-Splines shall be inserted in the kerf of the abutting or transverse edges of the tile.

UNITED STATES GYPSUM

ceilings

b

1566

AIRSON* Air Distribution Systems

PRESSURIZED ACOUSTICAL CEILINGS

A.I.A. File No. 39-B-1

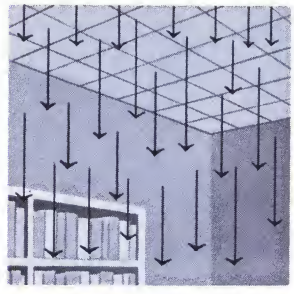
fire rating	description	test no.	sound rating stc	sound rating 9-f avg	relative cost index	comments	folder reference
3 hrs. (beam 5 hrs.)	AIRSON AURATONE FIRECODE Air Distr Syst on Exposed Grid—⅝"x24"x48" acoust panels 50% AIRSON A-5 or 100% AIRSON A-2—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2½" conc deck on cellular stl flr clg wt 1.2	UL Des 65-3 hr (f)	41 est		clg matls 102	Includes air controls in panels; "cost index" excludes zone barriers & plenum insul.	b-1566
3 hrs. (beam 4 hrs.)	AIRSON AURATONE FIRECODE Air Distr Syst on Concealed Z-Splines—¾"x12"x12" acoust tile 100% AIRSON A-2 or 50% AIRSON A-5—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2½" conc deck on cellular stl flr clg wt 1.2	UL Des 59-3 hr (f)	40 to 44		clg matls 142	Includes air controls in tile—"cost index" excludes zone barriers & plenum insul.	b-1566
2 hrs.	AIRSON AURATONE FIRECODE Air Distr Syst on Exposed Grid—⅝"x24"x48" acoust panels 50% AIRSON A-5 or 100% AIRSON A-2—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—1½" PYROFILL gypsum conc roof deck with ½" SHEETROCK formbd over bar joist clg wt 1.2	UL RC-6-2 hr (f)	41 est		clg matls 102	Includes air controls in panels; "cost index" excludes zone barriers & plenum insul.	b-1566
2 hrs.	AIRSON AURATONE FIRECODE Air Distr Syst on Exposed Grid—⅝"x24"x48" or 24"x24" acoust panels 50% AIRSON A-5 or 100% AIRSON A-2—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2½" conc deck on riblath over bar joist cig wt. 1.2	UL Des 72-2 hr (f)	N/A		clg matls 102	Includes air controls in panels; "cost index" excludes zone barriers & plenum insul.	b-1566
2 hrs. (beam 2 hrs.)	AIRSON ACOUSTONE 120 Air Distr Syst on USG Concealed Z-Spline Susp Syst—¾"x12"x12" min acoust tile 50% AIRSON A-5 or 100% AIRSON A-2—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wood bd—2½" conc deck on cellular stl fir clg wt 1.3	UL Des 85-2 hr (f)	39 est		clg matls 142	Includes air controls in tile; "cost index" excludes zone barriers & plenum insul.	b-1566
2 hrs.	AIRSON AURATONE FIRECODE Air Distr Syst on Concealed Z-Splines—⅝"x12"x12" acoust tile 100% AIRSON A-2 or 50% AIRSON A-5—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2½" conc deck on riblath over bar joist clg wt 1.2	UL Des 84-2 hr (f)	40 to 44		clg matls 135	Includes air controls in tile—"cost index" excludes zone barriers & plenum insul.	b-1566
2 hrs.	AIRSON AURATONE FIRECODE Air Distr Syst on Concealed Z-Splines—⅝"x12"x12" acoust tile 100% AIRSON A-2 or 50% AIRSON A-5—clg interrupted—light fixt prot by 1¼" THERMAFIBER min wool bd—2" THERMOFILL gypsum conc roof deck with ½" SHEETROCK formbd over bar joist clg wt 1.2	UL Des RC-13-2 hr(f)	40 to 44		clg matls 135	Includes air controls in tile—"cost index" excludes zone barriers & plenum insul.	b-1566
incomb. class A	AIRSON AURATONE Air Distr Syst on Exposed Grid—⅝"x24"x24" or 24"x48" acoust panels slotted AIRSON A-5 or A-2 on a 100%, 50% or 25% basis clg wt 1.2	authority ASTM E84-61T	N/A		clg matls 102	Air controls in panels; "cost index" excludes zone barriers & plenum insul.	b-1566 f-1926
incomb. class A	AIRSON ACOUSTONE "F" Air Distr Syst on USG Concealed Z-Spline Susp Syst—¾"x12"x12"or 12" x24" min acoust tile—slotted AIRSON A-2 or A-5 clg wt. 1.3	authority ASTM E84-61T	36 est based on 50% A-5		clg matls 112	Basic concealed system; "cost index" excludes zone barriers & plenum insul.	b-1566 f-1926
incomb.	AIRSON Grid Air Distr Syst—Exposed AIRFLO grid systems for standard acoust panels—adjustable air distr through grid itself	—	N/A		clg matls 102 excl plenum treatmt	Basic exposed grid system with unslotted panels—steel or aluminum grid	b-1566 f-1926

description

In the AIRSON* Air Distribution Systems, primary equipment supplies properly conditioned air to the plenum chamber above a suspended ceiling of acoustical tile or panels. The air is forced through controlled jets in the acoustical ceiling material or in the grid system to provide draft-free air distribution and a controllable comfort level throughout the space. Suitable for both heating and cooling, the AIRSON Systems may be zoned to account for varying design requirements within the occupied space. The systems described below offer proper air distribution together with the beauty, high sound absorption, sound attenuation and light reflection of incombustible acoustical ceilings.

Where air distribution through the acoustical material is desired, ACOUSTONE* Mineral Tile suspended mechanically on the USG Concealed Z-Spline System or AURATONE Noncombustible Acoustical Panels on an exposed grid system are used. Specially designed ¾" thick AIRSON ACOUSTONE tiles 12" x 12" or 12" x 24" are foil-backed, fire-resistant and available in either the natural fissured pattern or the bas relief patterns of MOTIF'D* ACOUSTONE tile. AURATONE panels for this assembly are ⅝" thick and available in two different patterns (see Specifications). Fire resistance ratings for floor and ceiling assemblies up to 3 hours are available using AURATONE FIRECODE* Ceiling Panels (see table above).

(*continued on page 7*)

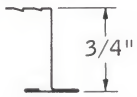


A.I.A. File No. 39-B-1

*Reg. U.S. Pat. Off.

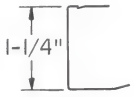
components / details

AIRSON ACOUSTONE system

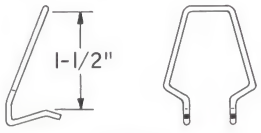


¾" Z-spline

¾" Z-spline splice

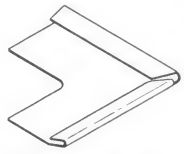


finish channel

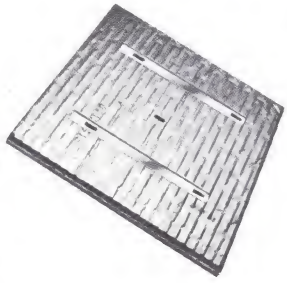


no. 82A clip

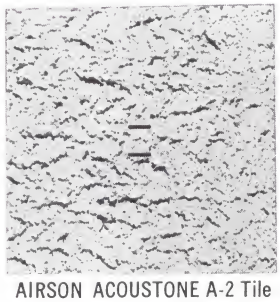
spot jet



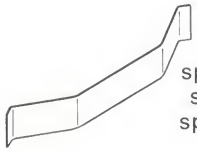
finish channel corner plate



Top and bottom views of AIRSON ACOUSTONE A-5 tile (above) show adjustable slides located on back of unit, and adjustment from face of unit made easily with ordinary ice pick for air flow control.



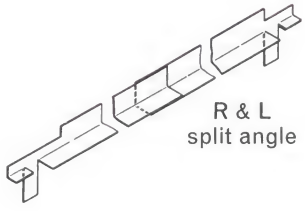
AIRSON ACOUSTONE A-2 Tile



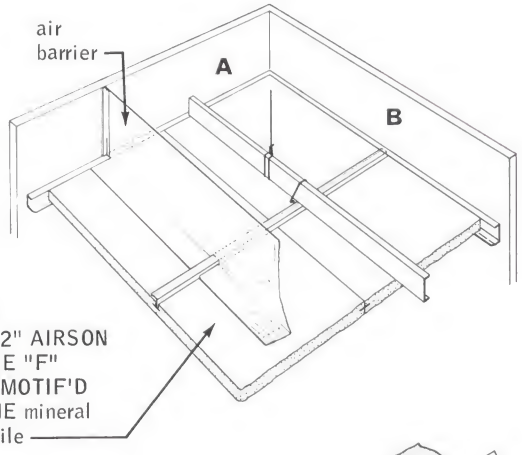
spring steel spacer

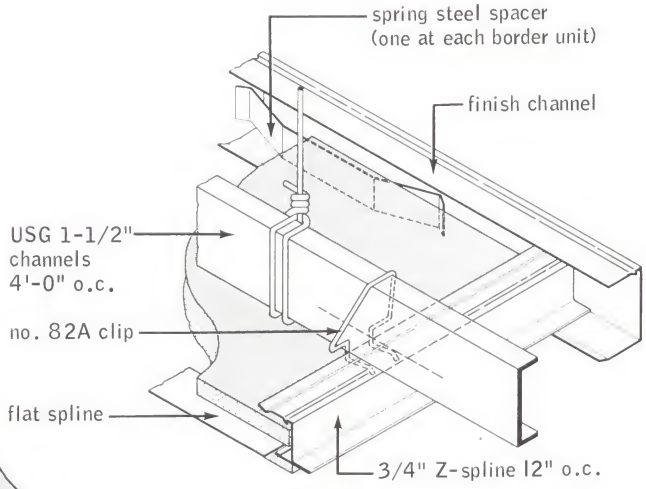
flat spline

angle spline

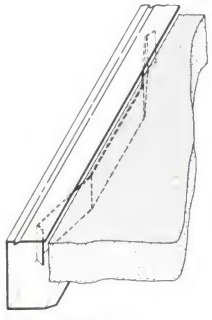


R & L split angle

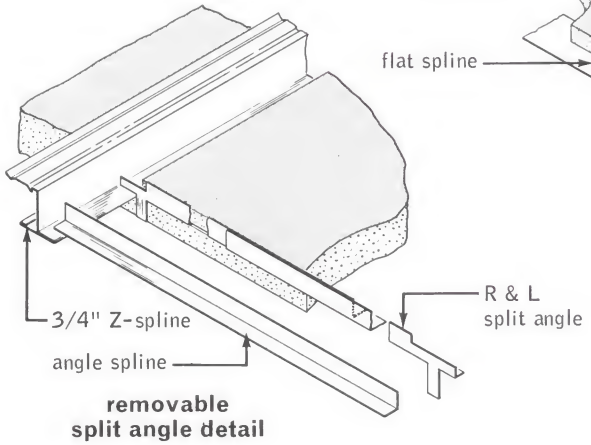




detail at wall—B



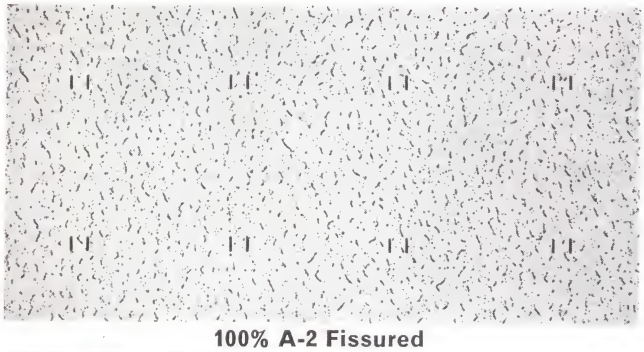
detail at wall—A



removable split angle detail

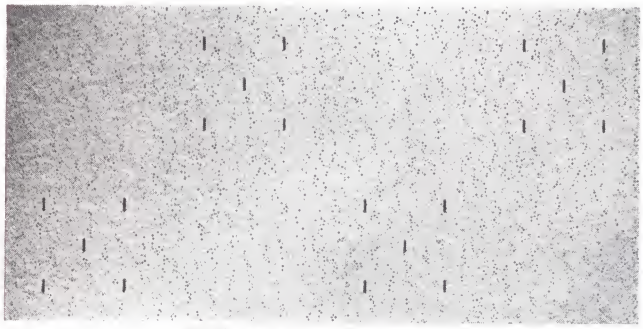
components / details

AIRSON AURATONE system

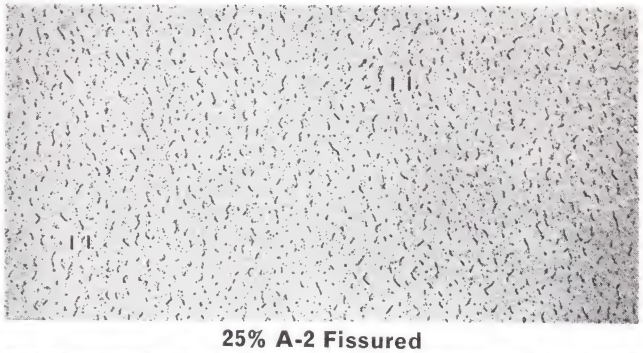


100% A-2 Fissured

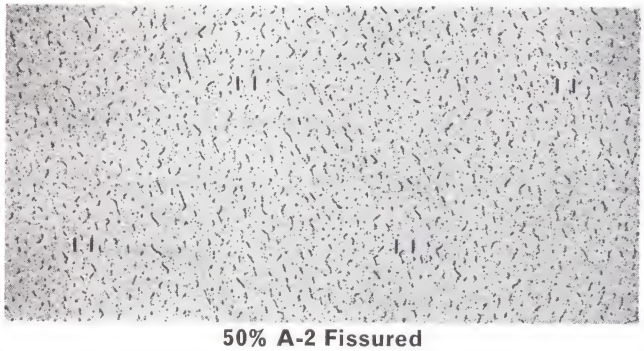
100% A-5 Pin-Perforated



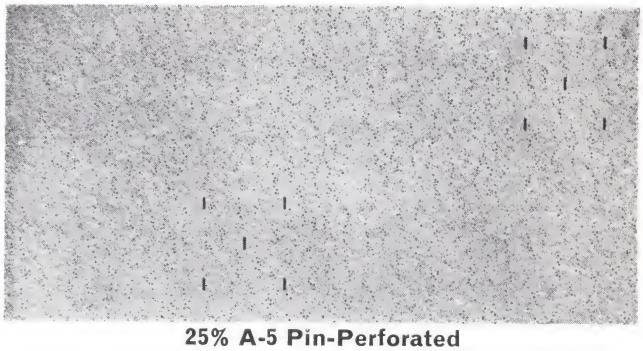
50% A-5 Pin-Perforated



25% A-2 Fissured



50% A-2 Fissured

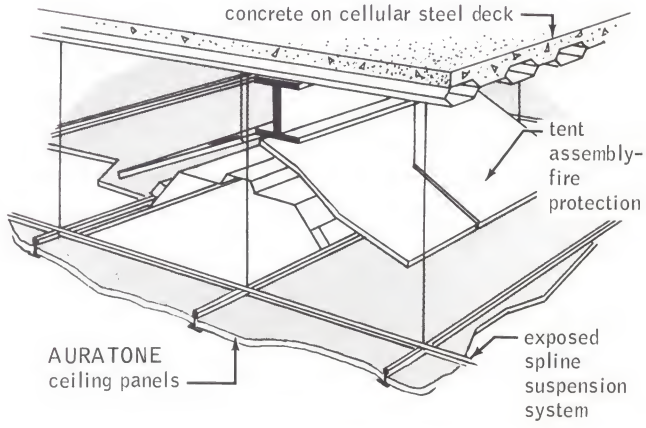


25% A-5 Pin-Perforated

Adjustable damper slide provides control of air passing through the two openings in A-2 panels without removing the panel.

The AIRSON AURATONE system combines all the qualities of the AIRSON Air Distribution System with the added flexibility of AURATONE Panels. The panels are available in two patterns with 25%, 50% and 100% slotting as shown above. When erected on a commercially available exposed grid system, these panels also offer fire resistance plus an optimum balance between sound attenuation and sound absorption. For more information on construction and details, see separate USG Systems Folder on AURATONE Suspension Systems.

U.L. Design No. 65—3-Hour (5-hour beam)
(2-hour bar joist Design Nos. 72 and RC-6 also available)

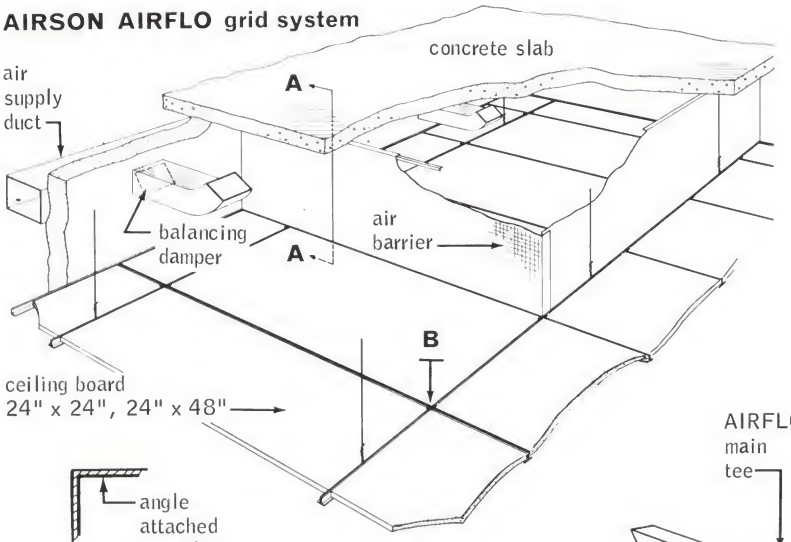


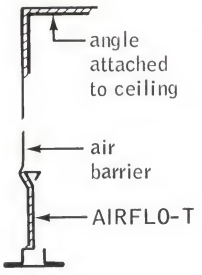
*Reg. U.S. Pat. Off.

details

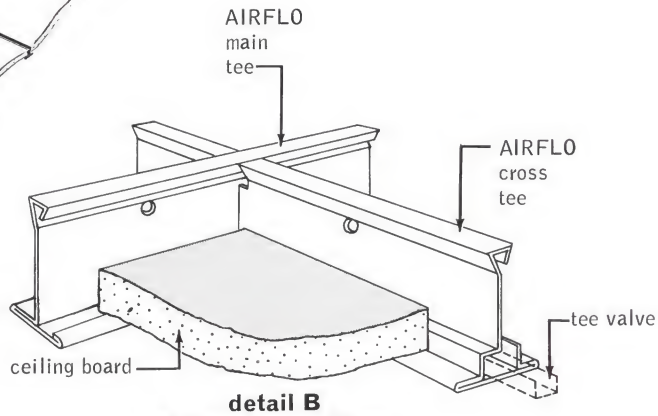
AIRSON AIRFLO grid system

The AIRSON AIRFLO grid system utilizes standard acoustical materials in 24″x24″ or 24″x48″ panel sizes and provides for air distribution through the grid. Hollow-tee sections, fabricated of steel, have air-flow slots that are fully adjustable and provide 100% control without removing acoustical panels. A positive lock between main runners and cross tees assures automatic 90° alignment.





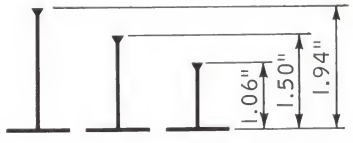
section—AA



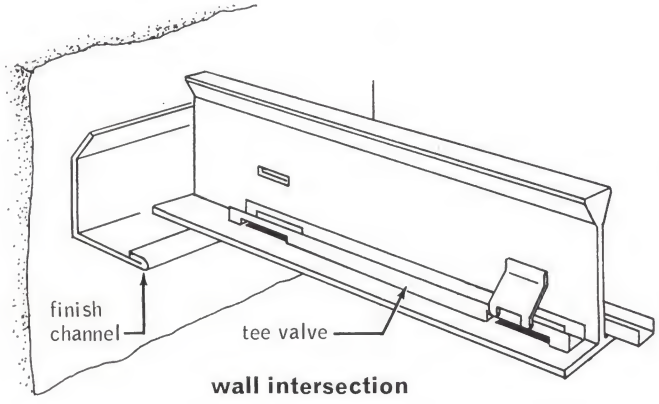
detail B
4-way intersection

AIRSON LOK grid system

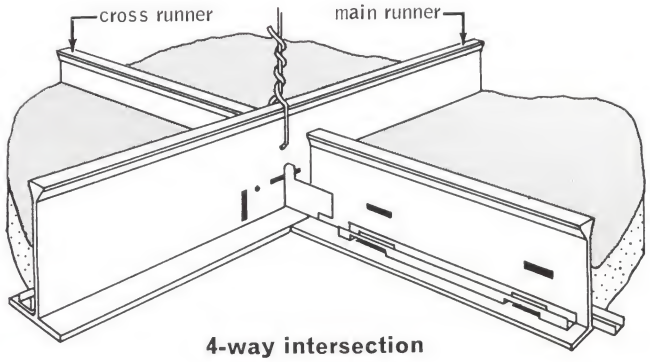
The AIRSON LOK grid is an extruded aluminum grid system that uses standard 24″x24″ or 24″x48″ acoustical panels. It is designed with two parallel orifices in the runner. Each pair of orifices is spaced 4″ o.c., with factory installed dampers available as an optional feature. Generally, the AIRSON LOK grid system is specified for average or higher-than-average ceiling heights or where unusual moisture conditions prevail.



runner sizes



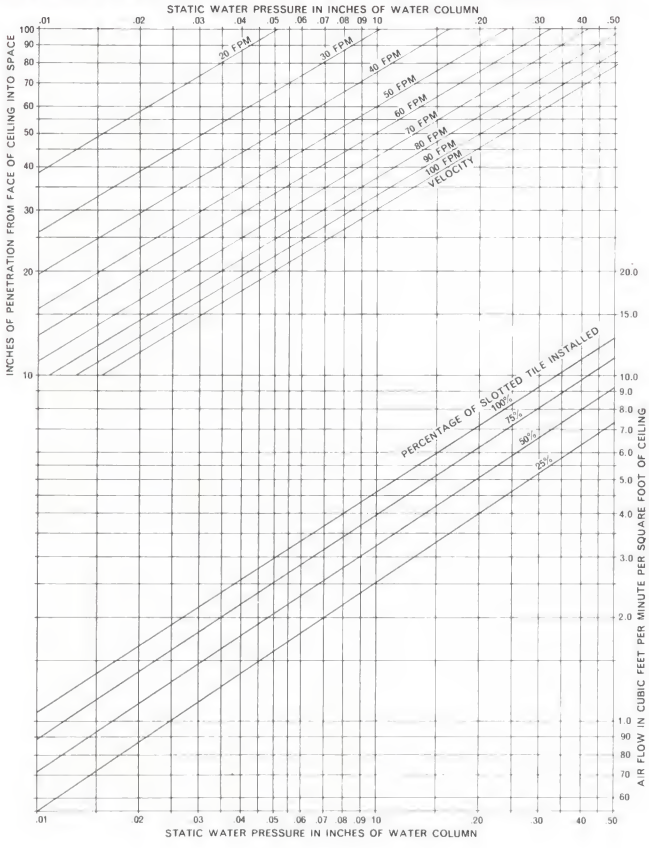
wall intersection



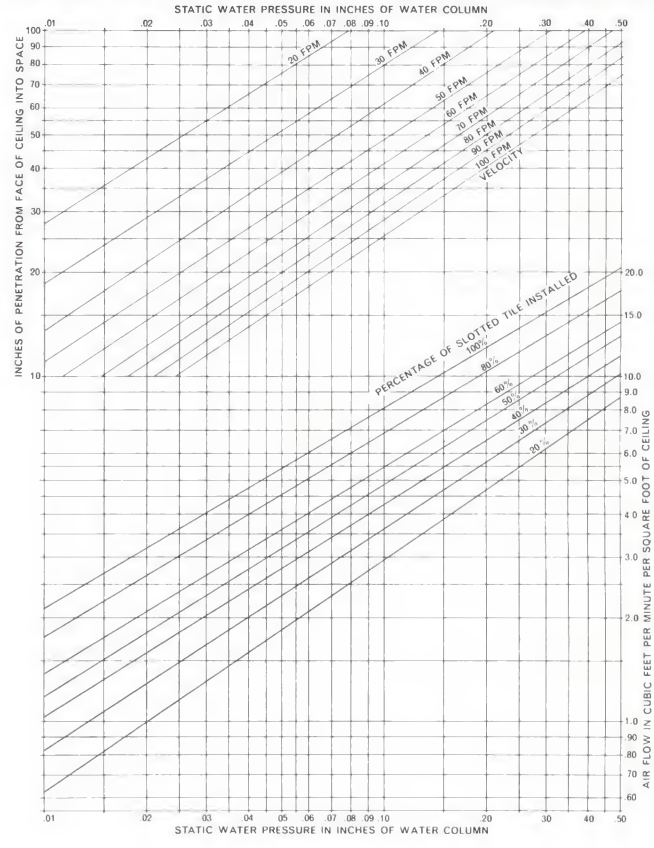
4-way intersection

technical data

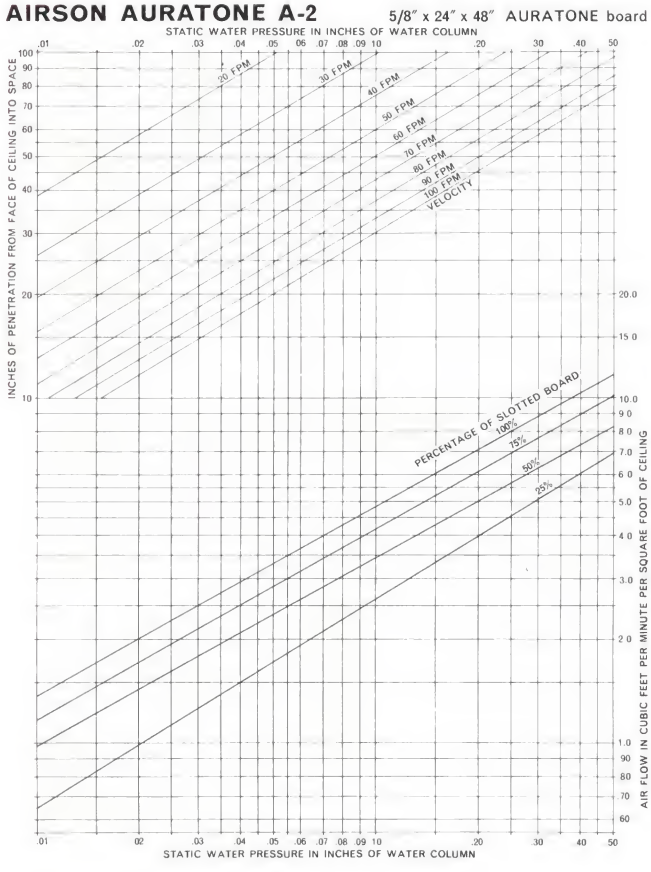
AIRSON ACOUSTONE A-2 3/4″ x 12″ x 12″ ACOUSTONE TILE



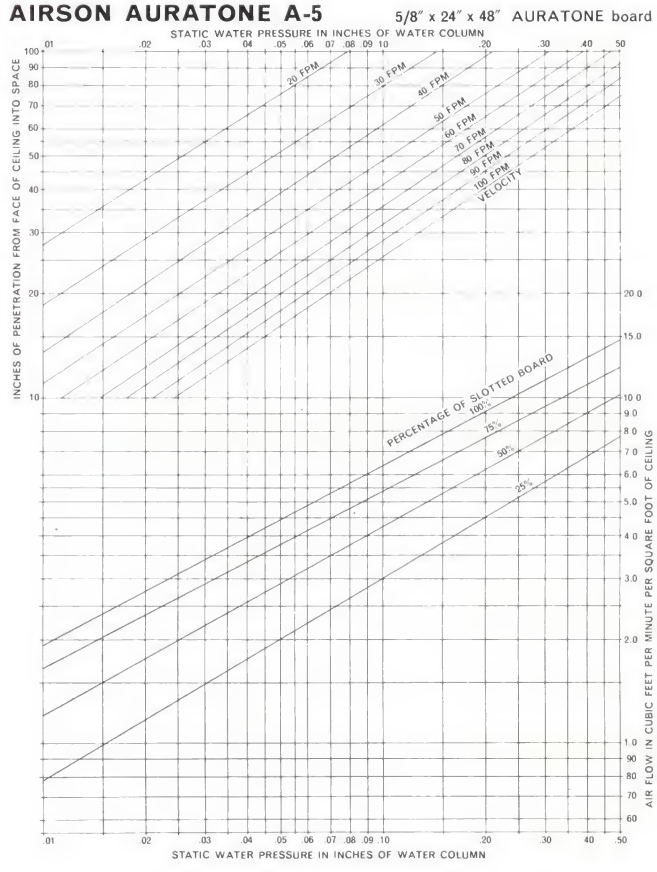
AIRSON ACOUSTONE A-5 3/4″ x 12″ x 12″ ACOUSTONE TILE



AIRSON AURATONE A-2 5/8″ x 24″ x 48″ AURATONE board



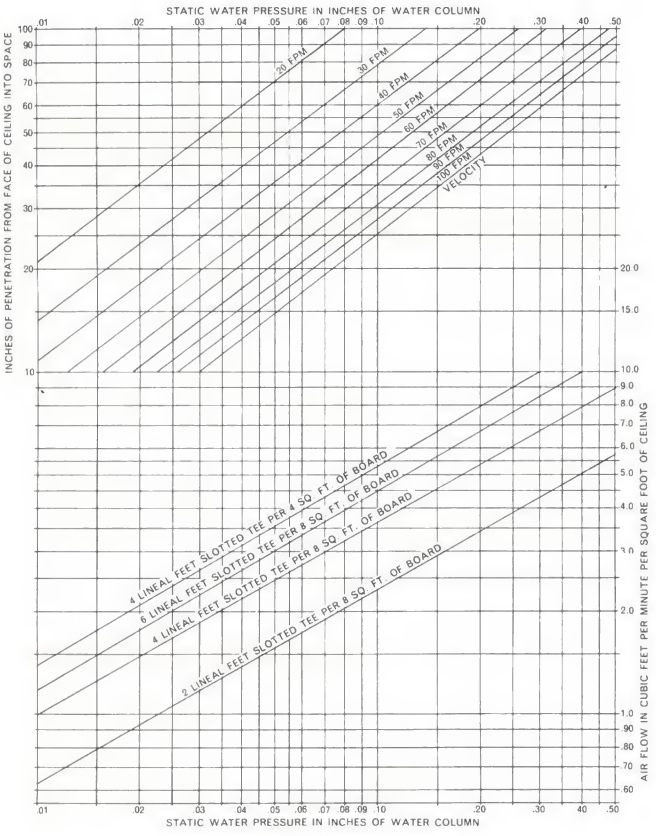
AIRSON AURATONE A-5 5/8″ x 24″ x 48″ AURATONE board



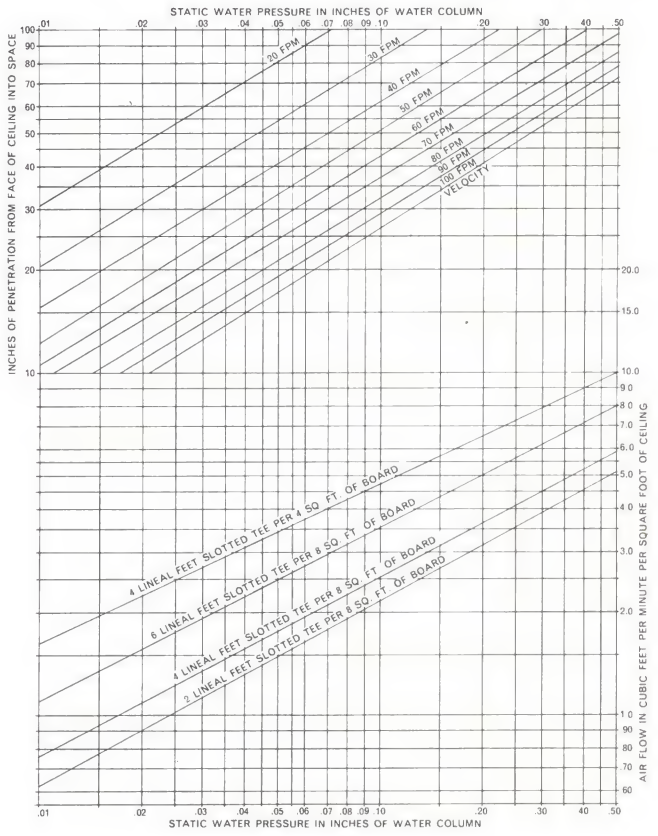
*Reg. U.S. Pat. Off.

technical data

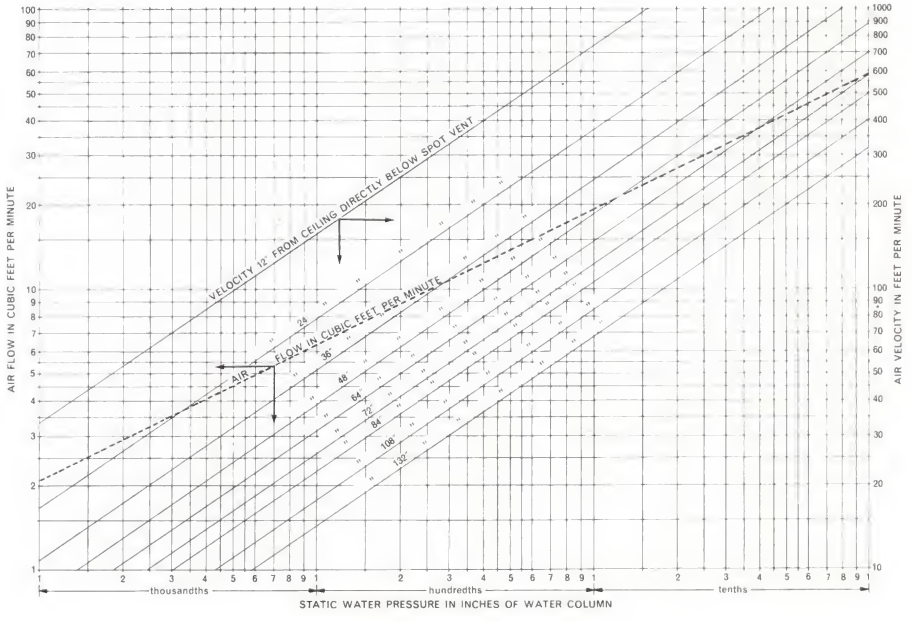
AIRSON AIRFLO T-2 grid 5/8″ x 23-1/2″ x 47-5/8″ AURATONE board



AIRSON LOK grid 5/8″ x 23-1/2″ x 47-5/8″ AURATONE board



SPOT JET—4″ diameter



description *(continued from page 1)*

For air flow through the acoustical material, two jet arrangements are offered: the A-5 with 5 orifices per sq. ft. meets large flow requirements and normal ceiling height conditions; the A-2 with 2 orifices per sq. ft. gives deeper penetration for high ceiling requirements. Adjustable dampers installed on the back of the tile permit air flow to be controlled after installation.

Where the economy of large size panels and greater accessibility are required, plain, unslotted AURATONE Ceiling Panels may be erected on the AIRSON AIRFLO* grid or AIRSON LOK* grid suspension system. In these exposed grid systems, conditioned air is distributed through controllable orifices in the grid members. The AIRSON AIRFLO grid consists of steel fabricated, hollow tee sections with air distribution slots in the face of the tee. The AIRSON LOK grid, consisting of aluminum tee-sections with orifices spaced 4″ o.c., is recommended for use where high moisture and humidity conditions prevail. Adjustable dampers are available for the tee-sections to provide controllable air distribution.

To assure high quality installation, AIRSON Systems are available through dependable contractors carefully selected and licensed by the United States Gypsum Company.

function and utility

Job Proven—Thousands of applications have shown the adaptability of AIRSON Systems to all types of new construction or modernization wherever air conditioning is required and the ultimate in environmental comfort is desired. AIRSON Systems are backed by far more actual job experience than any other pressurized plenum type of air distribution.

Comfort—Uniform air distribution of conditioned air is provided through controlled air velocity and air penetration over the entire conditioned space. Undesirable drafts and air stagnation are eliminated.

Control and Balancing—Slide controls in every active tile or grid permit adjustment of air velocity and balance of air motion in the occupied space without removing tile.

Appearance—The timeless beauty of ACOUSTONE* Mineral Acoustical Tile with its natural fissures masking the AIRSON orifices, or any of the four distinctive patterns of AURATONE, provide a pleasant aesthetic appointment to any architectural project.

Fire Resistance—Incombustible components offer fire resistance ratings up to 3 hours.

Sound Control—Good sound attenuation effectively retards sound travel through the ceiling and over partitions. Sound absorption properties effectively quiet the occupied space (ACOUSTONE: 39.8 db, 70-80 NRC).

Versatility—A wide variety of ceiling materials, patterns and constructions meet most design requirements. The uninterrupted ceiling surfaces with ceiling-wide air distribution are ideal for quick, economical allocation of partitions or space alteration. Comfort adjustments are readily made with controls found in the system.

Economy—Maintenance costs for cleaning and repainting are low because the air flow keeps dirt away from the ceiling. If required, AIRSON ACOUSTONE and AURATONE can be cleaned easily with a vacuum cleaner or damp sponge or can be repeatedly spray or brush painted. The elimination of supply diffusers and reduction in terminal ductwork frequently provides substantial savings over conventional systems.

limitation

AIRSON ACOUSTONE and AURATONE products are not recommended for use where exposed to steam or very high humidity.

specifications

notes to architect

1. *The AIRSON Systems can be adapted to almost any heating and cooling requirements. Application information and the necessary design data required to establish system static pressure, penetration and percentage of open tile or lineal feet of open grid or runners is available from U.S.G. In addition, the AIRSON Contractor has a qualified mechanical engineer who can support you in making design, installation and service decisions and also provide a preliminary cost survey without obligation.*

2. *AIRSON ACOUSTONE Tile should not be used for air returns; separate grilles are recommended.*

3. *AIRSON AIRFLO System may not be suitable for use in salt water coastal areas; the AIRSON LOK System is recommended.*

4. *Where large quantities of conditioned air are required, specially engineered Spot Jets should be placed in the center of the acoustical tile.*

5. *To insure proper system performance, outside walls should be insulated, care must be taken to insure that the AIRSON space is tight and free from leakage, and all mouldings should be tightly caulked. Sound attenuation and noise reduction coefficient range of the acoustical tile should be specified.*

6. *The spacing of hanger wires and channels is maximum and should not be exceeded. The grillage is designed to support the dead load of the acoustical ceiling and is not designed to support concentrated loads of mechanical equipment or workmen, particularly after the ceiling tile has been applied. Independently supported catwalks and equipment platforms should be provided.*

7. *The THERMAFIBER* Rated Light Fixture Protection, a 1¼″ thick semi-rigid mineral wool board shipped in standard modules and job assembled using standard tie wire, is required for fire-rated construction in accordance with Underwriter's Laboratories specifications.*

8. *The heating and cooling plants, including all supply and return air ductwork to and from the areas incorporating the AIRSON System, all included wall and ceiling return air grilles, and any auxiliary heating and cooling units should be installed by others.*

9. *Vinyl ivory painted ACOUSTONE is recommended for applications subjected to high density smoke or cooking fumes such as in restaurants, snack shops, bars, etc.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill. 60606.

scope—This contractor shall furnish and install AIRSON System of air distribution for heating (and cooling) where shown on the drawings. All material shall be furnished and installed by an applicator licensed by the United States Gypsum Company. All overhead architectural, mechanical, and electrical work shall be completed, all opening closures shall be installed, and room areas shall be free from excessive moisture prior to the installation of the system.

general provisions—Bases to receive acoustical units and the units themselves shall not be installed unless satisfactory closures for windows and other openings are in place and roofs are tight. Temperatures in the working areas shall be well above freezing.

The area or room in which acoustical units are to be installed shall not be damp; i.e. plaster, terrazzo floor, etc. shall be previously installed and dry.

*Reg. U.S. Pat. Off.

system performance—The air distribution ceiling system shall contain an incombustible dampering method for balancing air flow into the conditioned space and shall be adjustable from the room side of the ceiling, without removal of the acoustical tile or board. Each slotted tile shall have not more than ½ of 1% open area to produce an air velocity of not less than 25 feet per minute (FPM) and no more than ____ FPM at ____ inches above the floor (data obtainable from AIRSON Penetration Charts). The noise reduction coefficient range of the tile shall be no less than ____ (see USG Sound Control Products Folder for specific values). The ceiling attenuation must average no less than ____ db (see published values for AIRSON ACOUSTONE and AIRSON AUDITONE).

materials—See USG Product Folder in this series for technical information on Sound Control Products.

Acoustical Tile by the United States Gypsum Co. Shall Be:

AIRSON ACOUSTONE Mineral Acoustical Tile—Foil Backed.

a. ¾″ x 12″ x 12″ (A-2, A-5 slotted, unslotted).

b. ¾″ x 12″ x 24″ (A-2, A-5 slotted, unslotted).

AIRSON MOTIF'D ACOUSTONE—Foil Backed.

¾″ x 12″ x 12″ (A-2, A-5 slotted, unslotted), Pattern No. (2, 5, 10, 19, 33, 36 or 40).

AIRSON AURATONE (FIRECODE) Acoustical Ceiling Panels.

⅝″ x 24″ x (24″, 48″) (A-2, A-5 slotted or unslotted) (25%, 50%, 100%), Pattern (Fissured, Pin-Perforated).

Base For Application Shall Be:

1½″ cold rolled carrying channel grillage supported by No. 10 ga. hanger wire.

Materials For AIRSON ACOUSTONE System Shall Be:

a. ¾″ USG Z-Spline.

b. Flat Spline of galvanized steel.

c. Spring steel spacers.

d. Finish channel and finish channel corner plates.

e. 82-A Clips—to attach Z-Spline to 1½″ cold rolled carrying channels.

f. R & L Split Angles & L-Splines with tabs for access.

Materials For AIRSON AIRFLO Shall Be:

a. AIRFLO Main Runners of .020 steel having a baked enamel finish.

b. AIRFLO Cross-Runners, Open (and closed) Type (as required by the mechanical engineer from the AIRSON charts).

c. AIRFLO Mouldings with provisions for locking cross-runners which shall be included at every junction.

Materials For AIRSON LOK System Shall Be:

a. AIRSON LOK Main Runners.

b. AIRSON LOK Cross Runners, Vented (and solid) Type (as required by the mechanical engineer from the AIRSON charts).

c. AIRSON LOK Mouldings.

installation

Base—1½″ cold rolled channel grillage—No. 10 ga. hanger wires shall be securely attached at 4′ o.c. 1½″ carrying channels shall be tied to the hanger wires and shall be hung level at a maximum spacing of 4′ o.c. The 1½″ channel adjacent to an intersecting wall shall be placed not more than 12″ from the wall.

AIRSON ACOUSTONE—¾″ Z-Splines shall be attached 12″ o.c. and at right angles to metal grillage by No. 82-A clip. The tile shall be supported by inserting the Z-Spline flanges into the kerfed edges of the tile. Abutting edges shall be aligned by inserting flat steel spline (or R & L Split Angle & L-Spline for access) into the kerfs of the transverse edges of the tile. ACOUSTONE finish channel shall be provided at the wall intersections and spring steel spacers placed into the channel 12″ o.c. Finish channel corner plate shall be used at all exterior corners. At interior corners where channel is to continue, flanges shall be cut and the web bent to form corners, overlapping channel flanges.

AIRSON Slides—Attach to the back side of all tile with jets.

AIRSON Space—AIRSON Space shall be provided above the suspended ceiling. The contractor shall check all drawings and job conditions and ascertain code or other requirements for covering and sealing the top and sides of the AIRSON Space and furnish and install the same. He shall make certain under any circumstances that the space is sealed tight against air leakage. *He shall insulate, if necessary, any walls of the space exposed to outside temperatures with a minimum of 1″ thick 3-lb. density THERMAFIBER curtain wall insulation.*

AIRSON Zone Barriers—AIRSON Zone Barriers shall be furnished and installed where shown on the drawings. Zone Barriers shall be constructed of AIRSONITE*-FT. Top edge shall be turned at least 2″, coated with adhesive, and held permanently in place with a sheet metal angle fastened securely. All edges shall be lapped at least 2″ and cemented together. Bottom edges must be lapped at least 3″ on the back of the ACOUSTONE Mineral Acoustical Tile and cemented directly to the tile.

AIRFLO and AIRSON LOK Grillage—Installation of the AIRFLO and AIRSON LOK grillage shall be in accordance with the manufacturers' recommendations and with the details shown in their literature.

UNITED STATES GYPSUM

seismic data—see page 11

roof decks

C

1646

Gypsum Concrete Roof Systems

A.I.A. File No. 4-L

fire rating	description	test no.	relative cost index	comments	folder reference
2 hrs.	PYROFILL Gypsum Concrete Roof Deck poured 2½″ min. thickn over ½″ SHEETROCK formbd—178 BT-1214 reinf mesh slab wt 12.8 thickn 3″	NBS-406 (f)	60	Thickn. includes formboard—prot. of primary steel required	c-1646
2 hrs.	PYROFILL Gypsum Concrete Roof Deck poured 1½″ min thickn over ½″ SHEETROCK formbd—bulb or clip tee on bar joist—susp AURATONE FIRECODE clg panels slab wt 8.5 thickn 2″	UL RC-6 (f)	205	Thickn. includes formboard excluding ceiling	c-1646
2 hrs.	PYROFILL Gypsum Concrete Roof Deck poured 1½″ min thickn over ½″ SHEETROCK formbd—bulb or clip tee on bar joist—susp AURATONE FIRECODE AIRSON air distr acoust clg panels slab wt 8.5 thickn 2″	UL RC-6 (f)	250 incl clg assembly	Thickn. includes formboard excluding ceiling	c-1646
2 hrs.	THERMOFILL Gypsum Concrete Roof Deck poured 2″ min thickn over ½″ SHEETROCK formbd—bulb tee on bar joist—susp AURATONE FIRECODE acoust clg tile slab wt 8.2 thickn 2½″	UL RC-13 (f)	240	Thickn. includes formboard excluding ceiling	c-1646
2 hrs.	THERMOFILL Gypsum Concrete Roof Deck poured 2″ min thickn over ½″ SHEETROCK formbd—bulb tee on bar joist—susp AURATONE FIRECODE AIRSON air distr acoust clg tile slab wt 8.2 thickn 2½″	UL RC-13 (f)	256	Thickn. includes formboard excluding ceiling—air control valves in the tile	c-1646
1 hr.	PYROFILL Gypsum Concrete Roof Deck poured 2″ min thickn over ½″ SHEETROCK formbd—178 BT-1214 reinf mesh slab wt 10.7 thickn 2½″	GA-NBS-400 (f)	54	Thickn. includes formboard—prot. of primary support steel required	c-1646
incomb.	PYROFILL or THERMOFILL Gypsum Concrete poured over incomb formbd—rated incombustible in accordance with NBFU definition	SS-S-00118C fed spec	—	Thickness of fill may be 1½″ or 2″ min.	c-1646

description

In these lightweight fire-resistant systems, quick-setting gypsum concrete is poured-in-place over galvanized reinforcing mesh and formboards supported by steel sub-purlins to provide a structurally strong monolithic roof deck slab ready for immediate roofing. These high-strength systems meet normal live and dead load requirements for roof purlin spacings up to 12′ and, in addition, provide high safety factors for vertical loads and seismic forces.

Gypsum concrete roof decks have proved themselves in over 50 years of application to be ideally suited for use over steel roof framing on flat or nearly flat roofs. They are readily adapted to low-pitched or geometric roof constructions where roof framing is steel, concrete or wood.

Gypsum concrete roof decks are available in 2″ to 3½″ thicknesses, depending on the thickness of fill and type of formboard, and in two types of gypsum concrete fill. PYROFILL* Gypsum Concrete, the original standard roof deck fill, provides universal application and fire-resistance ratings up to 2 hours (see table above). THERMOFILL* Gypsum Concrete offers the same proven features of PYROFILL and in addition, offers a combination of light weight and higher insulation value. Where light weight and cost are the most important requirements, the Economy System, using a 1½″ gypsum slab, may be specified for live loads of 40 psf or less.

Six types of formboards are available for use, singly or in combination, to meet specific design requirements. Suitable for use in concealed or exposed roof decking, these formboards provide sound control, insulation, fire protection, economy and light reflection as needed. See page 2.

U.S.G. Gypsum Roof Decks are installed (according to specifications) by expert approved contractors who offer consultation on details and special requirements, accurate shop drawings and the skills necessary for smooth coordination with other trades. Unit responsibility by a contractor and United States Gypsum is an important factor in obtaining satisfactory results with PYROFILL and THERMOFILL Roof Decks.

function and utility

Fire Protection—constructed of incombustible components, these systems have demonstrated a one and two-hour fire endurance, without a suspended ceiling. This means fire insurance rates may be reduced as much as 30%.

High Strength—The monolithic construction, structurally integrated to the roof framing, actually reinforces the building. These decks are rigid diaphragms that resist seismic forces and uplift caused by hurricane winds.

Light Weight—These systems weigh 6 to 12 psf (excluding sub-purlins); offer possibility for savings in structural framing.

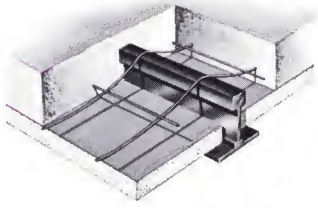
Fast Installation—As much as 30,000 sq. ft. can be poured in one day by a single crew. The quick setting action of gypsum concrete permits roofing within hours after the deck is poured.

Versatility—A wide variety of formboards, sub-purlins and fills makes these systems adaptable to all types of roof design.

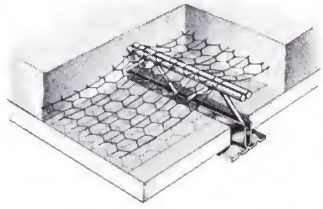
Economy—Available at low, competitive costs, gypsum roof decks offer possible savings through elimination of supplementary fireproofing, ease of application, lighter structural framing, earlier occupancy, low maintenance costs, and reduced fire insurance rates.

limitations

1. Gypsum roof decks are suitable for normal temperature and humidity conditions. Where abnormal conditions prevail, consult U.S.G. for recommendations.
2. Acid fumes, generally not harmful to gypsum, may affect framing materials. Consult U.S.G. for recommendations.
3. Certain recommendations concerning drying and ventilation, expansion and contraction, decorating and roofing must be adhered to for satisfactory performance of gypsum roof decks. See Specifications, page 14 for details.



bulb tee & 48-1214 mat



trussed tee & KEYDECK

A.I.A. File No. 4-L

*T.M. Reg. U.S. Pat. Off.

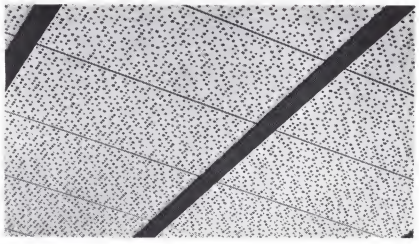
gypsum concrete fill

PYROFILL Gypsum Concrete is mill-formulated and composed of calcined gypsum and wood chips or shavings. It is mixed with clean water, only, at the job site and poured-in-place over permanent formboards. PYROFILL complies with ASA-A59.1-1954 and A.S.T.M. C 317-55 Standards.

THERMOFILL* Gypsum Concrete is mill formulated and composed of calcined gypsum and graded perlite aggregate. It is mixed with clean water, only, at the job site and poured-in-place over permanent formboards. THERMOFILL complies with ASA 59.1-54 and A.S.T.M. C 317-55 Standards. Not available north of 40th Parallel from Oct. 1 to April 1.

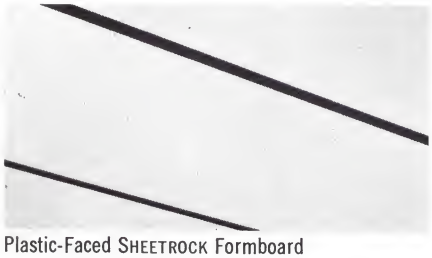
formboards

SHEETROCK* Formboard

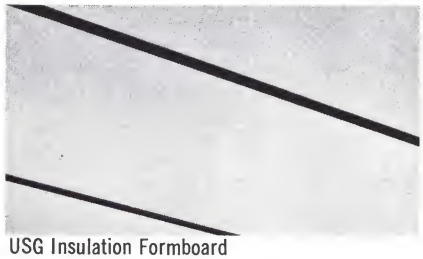


USG Acoustical Formboard

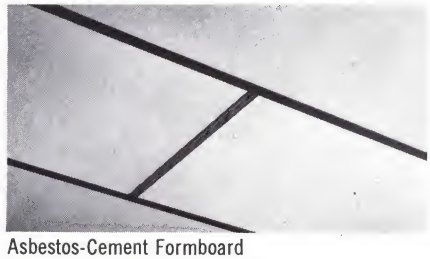
FIRECODE* Mineral Fiber Formboard



Plastic-Faced SHEETROCK Formboard



USG Insulation Formboard



Asbestos-Cement Formboard

SHEETROCK* Formboard is a rigid type gypsum board, ½″ thick by 32″ wide (or 48″ wide), and made to specified lengths to fit purlin spacings. Treated to resist mildew effectively where adequate ventilation is provided. Tested for 1- and 2-hour fire ratings when used with 2″ or 2½″ thick gypsum slab and exposed bulb tees.

Uses—Ideal for almost every roof deck need, concealed or exposed. Economical for warehouses, light manufacturing buildings, schools—in any construction where durability and low cost are desired.

Plastic-Faced SHEETROCK Formboard is a rigid type gypsum board ½″ thick by 32″ wide, treated to resist mildew, incombustible, predecorated with a white vinyl plastic surface that is washable, highly light-reflective and durable; for interior ceilings or exterior soffits. Available in standard 8′ lengths (for information regarding availability of other sizes, contact your U.S.G. representative).

Uses—Durable and easy to maintain, also offers fine appearance in such exterior uses as exterior deck under-surfaces, eave overhangs, open walkways, and other areas exposed to intermittent weather, steam and moisture. Attractive white plastic finish resists dust accumulation; reduces maintenance costs.

USG Acoustical Formboard is a rigid type wood fiber insulation board having a perforated acoustical surface shop-primed white. It is 1″x12″x24″ in size and is treated to resist mildew effectively where adequate ventilation is provided.

Uses—Excellent for exposed ceilings in classrooms, offices and wherever built-in acoustical and insulative properties are desired. The result is a major saving under cost of separate acoustical and insulative ceiling treatment.

USG Insulation Formboards are rigid type, natural color or shop-primed white wood fiber boards sized 1″ thick, 32″, 36″ or 48″ wide, cut to specified lengths to fit purlin spacings. Also available ¾″ thick, 32″ wide, cut to fit purlin spacings. The natural color of Insulation Formboards will vary slightly so that field painting is required if a uniform appearance is desired. USG Insulation Formboards are treated to resist mildew effectively where adequate ventilation is provided.

Uses—Unexcelled for concealed interior construction areas that will have suspended ceilings. Provides a wide range of insulative factors to suit your requirements.

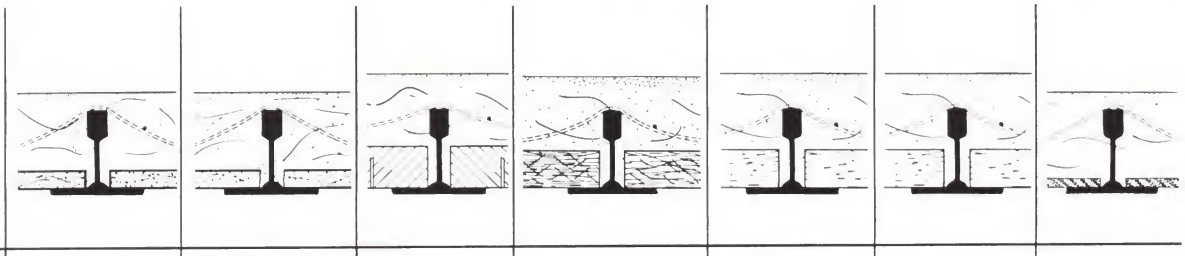
FIRECODE* Mineral Fiber Formboard is a rigid type, highly insulative mineral fiber board with a natural matte surface and medium tan color. It is available in an economy grade, 1″ thick by 24″ or 32″ widths and cut to purlin lengths up to 96″. The mineral fibers will not contribute to mildew growth. Glass Mineral Fiber Formboards, economy or industrial types, are available on the West Coast only.

Uses—Incombustible, offers excellent insulation, and is ideal for concealed areas where a ceiling will be suspended below the deck.

Asbestos-Cement Formboard is rigid industrial type asbestos cement board, ¼″ thick, cut to 32″ wide by 48″ long. Supplemental tees are required to support exposed end joints when they are not supported by the sub-structure. Asbestos-cement formboard is not manufactured by U.S.G.

Uses—Ideal for use on outdoor eave overhangs, covered walkways and applications above heat-producing machinery.

*T.M. Reg. U.S. Pat. Off.



formboard characteristics	SHEETROCK formboard	plastic-faced SHEETROCK formboard	acoustical formboard	insulation formboard	FIRECODE mineral fiber formboard	glass mineral fiber formboard	asbestos formboard
thickness	½″	½″	1″	1″ ¾″	1″	1″ to 1¾″	¼″
width	32″ or 48″ (4)	32″	12″	32″ 32″ 36″ 48″ (4) only	32″ and 24″	32″ and 24″	32″
length	up to 12′ max.	8′	24″	up to 12′ max.	up to 8′ max.	48″	48″
flame spread	15-20(1)	20-25(1)	(3)	(3)	0-5(2)	0-15	0
noise reduction coefficient	—	—	.65	(mill primed) (plain) (25) .35	—	.75	—
light reflection coefficient	66%	75%	78%	(mill primed) (plain) 78% 40%	—	industrial 45%	40%
specification compliance	ASTM C-317-55 C-472-61 Federal Spec. SS-L-30b Type V		Federal Spec. SS-A-118b Type 11-B Perforated	ASTM 208-55 Class A Federal Spec. LLL-F-00321b	Federal Spec. SS-A-118b Class A (Incombustible)	Federal SS-A-118b Class A (Incombustible)	Federal Spec. SS-S-283-A Type U

(1) Flame spread ratings determined by Underwriters' Laboratory testing.
(2) Flame spread rating determined by Southwest Research Institute.
(3) USG Insulation PYROFILL and USG Acoustical PYROFILL Decks are usually classed as incombustible with a deficiency penalty when combustible formboard is used.
(4) 48″ wide formboard may be used with light sub-purlin sections only if main supporting steel is spaced not to exceed 36″ o.c.

Reinforcing mesh for PYROFILL is one of the following types:

1. KEYDECK—A galvanized wire mesh, woven with 16 ga. straight wires and 19 ga. diagonal wires.
2. 48-1214—A galvanized, welded wire mesh with 12 ga. longitudinal wires at 4″ o.c. and 14 ga. transverse wires at 8″ o.c.

The effective cross-sectional area of reinforcing mesh placed at 90° to the sub-purlins is .026 sq. in. per foot of mesh width. U.S.G. neither manufactures nor sells reinforcing mesh.

Steel sub-purlins vary in size, weight and shape and are selected according to required span and loading. They provide anchorage of the deck against uplift, and restrict movement of the deck due to temperature change. Sub-purlin spacing accommodates 24″, 32″, or 48″ formboard widths with a slight tolerance for ease of formboard placement. Sub-purlins are spaced approximately 24⅝″, 32⅝″ or 48⅝″ o.c. and are welded to the structural framing members. When 48″ wide formboard is used with light sub-purlin sections, supporting steel spacing should not exceed 36″ o.c. U.S.G. neither manufactures or sells steel sub-purlins.

PYROFILL and THERMOFILL gypsum concrete with prestressed concrete roof framing

In these systems the gypsum roof deck slab is used in combination with prestressed concrete roof framing sections which may be spaced up to 16′ o.c. With structural units such as the LIN-TEE, the gypsum deck is poured over the entire area to form a monolithic slab. With the DYNACORE type unit the gypsum slab is located between the prestressed concrete framing members.

In these systems, steel sub-purlins are spaced 24⅝″ or 32⅝″ o.c. and securely welded to steel bars or plates embedded in the prestressed concrete roof framing sections. Formboards are placed atop the bottom flanges of the sub-purlins.

When used with LIN-TEES, paper-backed 3.4 lb. ⅜″ Riblath or galvanized wire mesh over 2″ strips of ½″ formboard is placed on top of the LIN-TEES. Reinforcing mesh is laid over the entire area in the LIN-TEES systems; only across the sub-purlins when DYNACORE prestressed concrete members are used.

With these systems, PYROFILL or THERMOFILL Gypsum Concrete is poured and screeded to a uniform 2″ thickness over the formboard.

Gypsum roof decks used in combination with prestressed precast concrete structural elements provide a number of highly desirable features:

1. Clear spans up to 100′ with shallow structural depths.
2. Incombustible construction without additional fireproofing.
3. Simplicity of construction for fast erection.
4. Economical initial cost and low maintenance.

These features make this system ideal for use where long clear unsupported spans are required such as in warehouses, shopping centers and school gymnasiums.

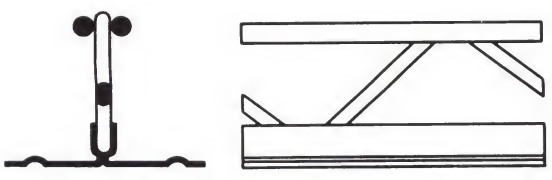
design data

design, weight and insulation values

(btu per sq. ft., per hr., per deg. F. in temperature)
"U" factor for complete deck including built-up roof covering
(supporting steel not included)

(calculated) thermal insulation values of	no insulation s	no insulation w	½" insulation s	½" insulation w	1" insulation s	1" insulation w	plaster ceiling (1) s	plaster ceiling (1) w	dry wt. of deck psf (2)
2½" SHEETROCK PYROFILL Roof Deck (2" PYROFILL Gypsum Concrete over ½" SHEETROCK or ½" Plastic-Faced SHEETROCK)	.33	.38	.22	.24	.17	.18	.22	.25	11
2" SHEETROCK PYROFILL Roof Deck (1½" PYROFILL over ½" SHEETROCK Formboard)	.34	.41	.21	.23	.15	.16	.23	.26	9
2½" SHEETROCK Roof Deck (2" THERMOFILL over ½" SHEETROCK or ½" Plastic-Faced SHEETROCK)	.27	.30	.18	.19	.14	.14	.19	.22	8
2" SHEETROCK THERMOFILL Roof Deck (1½" THERMOFILL over ½" SHEETROCK Formboard)	.31	.35	.20	.21	.14	.15	.21	.24	7
3" USG Insulation PYROFILL Roof Deck (2" PYROFILL over 1" USG Insulation Formboard)	.18	.19	.14	.15	.12	.13	.14	.15	10
2½" USG Insulation PYROFILL Roof Deck (1½" PYROFILL over 1" Insulation Formboard)	.20	.22	.15	.16	.13	.12	.15	.17	8
3" USG Insulation THERMOFILL Roof Deck (2" THERMOFILL over 1" USG Insulation Formboard)	.17	.18	.13	.14	.10	.11	.14	.15	8
2½" USG Insulation THERMOFILL Roof Deck (1½" THERMOFILL over 1" Insulation Formboard)	.18	.20	.13	.15	.11	.12	.14	.16	6
2¾" USG Insulation PYROFILL Roof Deck (2" PYROFILL over ¾" Insulation Formboard)	.21	.23	.15	.16	.12	.13	.16	.18	10
2¼" USG Insulation PYROFILL Roof Deck (1½" PYROFILL over ¾" Insulation Formboard)	.23	.25	.16	.17	.13	.14	.17	.19	8
2¾" USG Insulation THERMOFILL Roof Deck (2" THERMOFILL over ¾" Insulation Formboard)	.19	.21	.14	.15	.11	.12	.15	.16	7
2¼" USG Insulation THERMOFILL Roof Deck (1½" THERMOFILL over ¾" Insulation Formboard)	.21	.23	.15	.16	.12	.13	.16	.17	6
3" USG Acoustical PYROFILL Roof Deck (2" PYROFILL over 1" Acoustical Formboard)	.19	.20	.14	.15	.11	.12	.15	.16	10
3" USG Acoustical THERMOFILL Roof Deck (2" THERMOFILL over 1" Acoustical Formboard)	.18	.19	.13	.14	.11	.11	.14	.15	7
3" FIRECODE PYROFILL Roof Deck (2" PYROFILL over 1" FIRECODE Formboard)	.16	.17	.13	.14	.11	.11	.15	.15	10
3" FIRECODE THERMOFILL Roof Deck (2" THERMOFILL over 1" FIRECODE Formboard)	.14	.15	.12	.13	.10	.11	.14	.14	8
3" Mineral Fiber PYROFILL Roof Deck (2" PYROFILL over 1" Glass Fiber Formboard)	.15	.16	.12	.13	.11	.11	.14	.15	10
3" Mineral Fiber THERMOFILL Roof Deck (2" THERMOFILL over 1" Glass Fiber Formboard)	.14	.15	.12	.12	.10	.10	.13	.14	8
3½" Mineral Fiber PYROFILL Roof Deck (2" PYROFILL over 1½" Glass Fiber Formboard)	.12	.12	.10	.10	.09	.09	.11	.11	10.5
3½" Mineral Fiber THERMOFILL Roof Deck (2" THERMOFILL over 1½" Glass Fiber Formboard)	.11	.11	.09	.10	.08	.09	.10	.11	8.5
2½" Asbestos Board PYROFILL Roof Deck (2¼" PYROFILL over ¼" Asbestos Board)	.34	.39	.21	.23	.15	.16	.24	.26	12
2½" Asbestos Board THERMOFILL Roof Deck (2¼" THERMOFILL over ¼" Asbestos Board)	.28	.32	.18	.20	.14	.15	.20	.22	9

S—Summer W—Winter
(1) Suspended ¾" plaster ceiling & vented air space, no added insulation.
(2) Weight of sub-purlin or roofing is not included. PYROFILL density: /50 lb. per cu. ft. THERMOFILL density: /39 lb. per cu. ft.



trussed tee

bulb tee

rail

design data

sub-purlins for PYROFILL and THERMOFILL slabs over formboards

KEYDECK trussed tee *(for seismic design see page 13)*

type	wt. lbs./ lin. ft.	total safe uniform load in lbs. per sq. ft.																			
		3'0"	3'6"	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	6'8"	7'0"	7'6"	8'0"	8'6"	9'0"	9'6"	10'0"	10'6"	11'0"	11'6"	12'0"
5-9-18-1½	.78	137	100	77	61	49	41														
5-9-18-2	.78	191	141	108	85	69	57	48	41	39											
4-5-18-2	.90			118	93	75	62	52	45	42	38	33									
1-5-17-2	1.26					105	87	73	62	59	53	47	41	36	32						
1-3-17-2½	1.32						112	94	80	76	69	60	53	47	42	38	34	31			
00-5-15-2	1.58						118	99	85	81	73	64	56	50	44	40	36	32			
00-3-15-2½	1.64							130	110	105	95	83	73	65	58	52	47	42	39	35	31
000-5-14-2	1.78								93	88	80	69	61	54	48	43	39	35	32	30	
000-3-14-2½	1.85										104	91	80	71	63	57	51	46	42	39	35

1. The 2½" trussed tee is recommended where formboard of 1" thickness is used.
2. For tables showing deflection limitations, consult Keystone Steel & Wire Company technical folder.
3. Safe load tables are based on uniformly distributed loads on 3 continuous spans with sub-purlins space 32⅝" o.c. For 24⅝" spacing multiply value by 1.327.
4. When the trussed tee sub-purlin acts alone, it performs as a truss and loads are calculated by truss analogy.

Values shown are from data furnished by Keystone Steel & Wire Company

Note: Loads to left of first black line are less than 1/360. Loads between black lines are over 1/360 but less than 1/240. Loads to right of second black line are over 1/240 but less than 1/180. All deflection loads are calculated for the composite section of gypsum slab and tee.

rolled tees

Values shown by figures on gray background are based on properties determined by each sub-purlin manufacturer with fs @ 20,000 psi. Values shown on white background are for fs @ 33,000 psi. Sub-purlins spaced 2'8⅝" on center. M = 1/10 WL² except as noted. Exceptions to spacing and slab thickness are noted in table.

type	wt. lbs./ lin. ft.	wt. lbs./ sq. ft.	I in⁴	S in³	total safe uniform load in lbs. per sq. ft. 3'0"	3'6"	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"	9'6"	10'0"	10'6"	11'0"	11'6"	12'0"	12'6"	max. eave overhang (see note 7 & 8)
1120 B.T.	1.25	0.460	.108	.110	75	55	42	33																	
(C)						91	67•	52•	42•	37															1'9"
112	1.40	0.51	.123	.126	76	63	48	38	31									Loads Shown are for Minimum							
(I)						103•	74•	57•	51	42	34•							Section Modulus Within Each Group							1'5"
158 B.T.	1.40	0.513	.173	.171		86	66	52	42	34															
(C) (I)	1.60	0.540	.170	.172			96•	72•	57•	57	47•	37•													2'1"
168 B.T.	2.00	0.740	.250	.260			91	72	58	48	40	34													
(C) (I)	2.00	0.740	.247	.240				98•	76•	61•	67	54•	43•	35•											2'6"
178 B.T.	2.50	0.910	.389	.367				102	83	68	57	49	42	36	32										
(C) (I)	2.50	0.920	.364	.340					104•	82•	67•	56•	63•	51•	43•	36•	38•	35•	32•						3'0"
200 B.T.	2.90	1.064	.495	.474					112	92	77	66	57	49	43	38	34								
(C) (I)	3.00	1.100	.503	.460						108•	86•	71•	60•	52•	59•	49•	42•	35•							3'6"
218 B.T.	3.00	1.101	.601	.527						103	87	74	63	55	48	43	38	34	31						
(C) (I)	3.00	1.101	.598	.520	Spacing 2'9"						99•	81•	68•	58•	68•	58•	48•	41•	35•						3'9"
228 B.T.	3.65	1.340	.862	.745								104	90	77•	67•	58•	51•	46•	42•	38•	35•	33			
(C) (I)	3.65	1.340	.868	.736	Spacing 2'9"							111•	92•	77•	67•	58•	69•	59•	51•	44•	38•	34•			4'5"
258 B.T.	4.67	1.720	1.388	1.057										114	100	89	79	71	64	58	53	48	44	41	
(C)					Spacing 2'9"-Min. Thickness=3" total										105•	92•	81•	72•	65•	72•	63•	55•	48•	43•	5'4"
20-lb. Rail (C)	6.67	2.420	1.940	1.430	Spacing 2'9"-Min. Thickness=3" Total											119	104•	92•	82•	74•	71	65	59	55	6'2"
30-lb. Rail (C)	10.00	3.680	4.060	2.530	Spacing 2'9"-Min. Thickness=3" Total																115•	104•	94•	86•	8'3"

(C) Connors Steel Division, H. K. Porter Co., Huntington, W. Va. (I) Inland Steel Company, 30 W. Monroe St., Chicago 3, Ill.

Note: All properties shown are taken from data furnished by manufacturers indicated above.

1. Loads to the left of the heavy black line are calculated by U.S.G. as having live load deflections of less than 1/360. Loads to the right of the heavy black line are calculated as having deflections greater than 1/360 but less than 1/240. Deflection based on $D = \frac{0.00684\ WL^4}{EI}$
2. Loads marked • are limited by deflection and are calculated by U.S.G.
3. To determine total safe load for bending moment of $\frac{WL^2}{8}$ use 80% of the tabulated load.
4. To determine total safe load for a maximum fiber stress of 18,000 psi, use 90% of tabulated load shown for 20,000 psi fiber stress.
5. For suspended ceilings use loads shown to the left of the first black line, or 75% of loads shown between black lines can generally be used.
6. For tee spacing of 24⅝" multiply values shown by 1.327.
7. Values shown are for a total load of 45 pounds per square foot. Bending moment M = ½ WL² spaced as indicated.
8. Caution must be used in selecting sub-purlins for eave overhangs where heavy wood nailers, angles, gutters or soffits are supported by sub-purlins. Where these conditions are noted, the maximum eave overhang for a given sub-purlin must be checked by calculating the maximum moment developed, since loads applied beyond or at the end of the sub-purlin greatly increase the total moment. Deflection should also be taken into account on overhang designs.

Max. Bending Moment $M = fsS$

Safe uniform load: $W = \frac{2M\ (\text{eave overhang})}{L^2}$

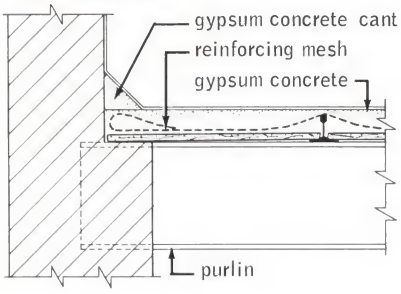
Deflection eave overhang (assume uniform loading) $d = \frac{wL^4}{8EI}$

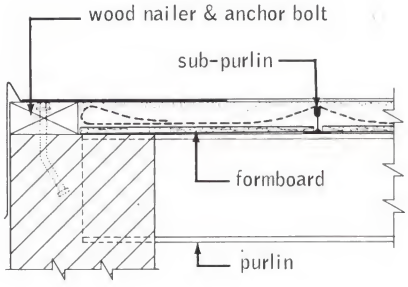
details

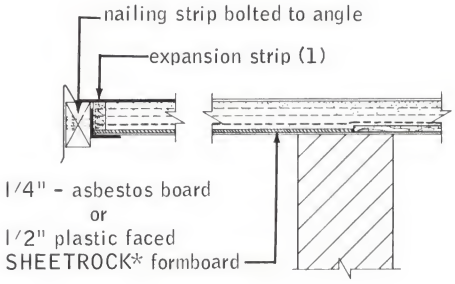
scale: ¾″ = 1′-0″

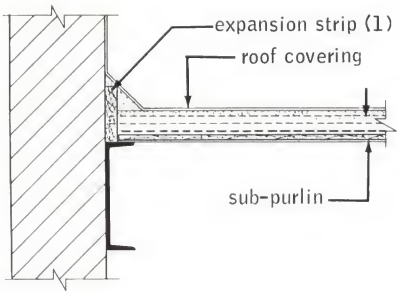
application over beams and bar joists

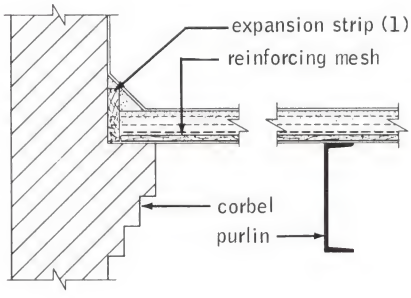
wall details

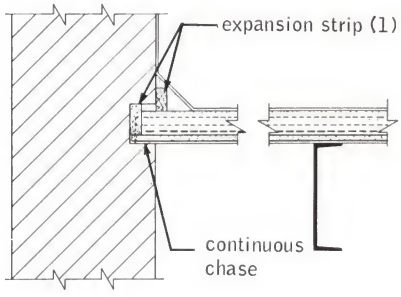




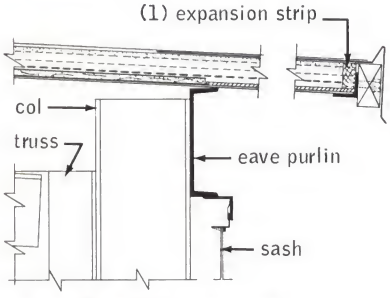


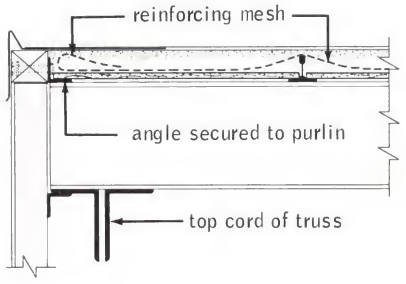


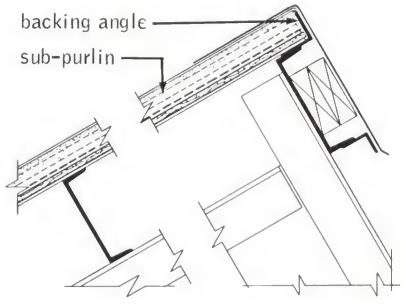




eaves

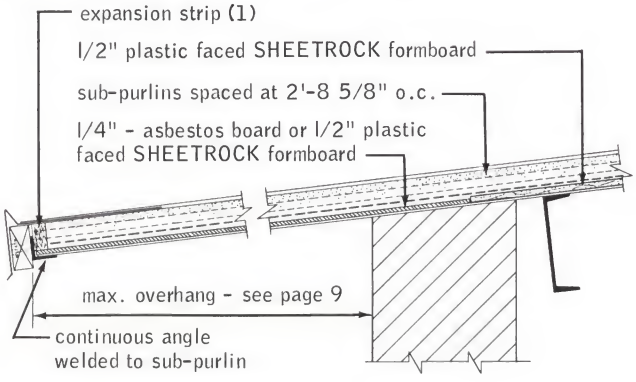


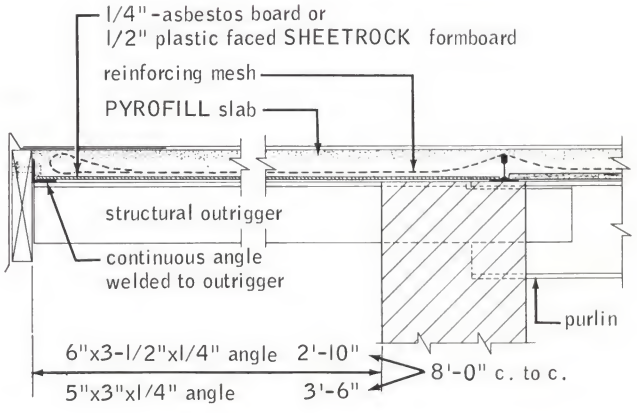




eave & gable overhang

(overhang based on 45#/□′ total load)



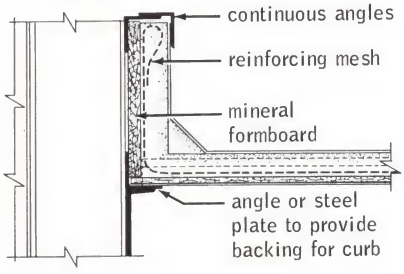


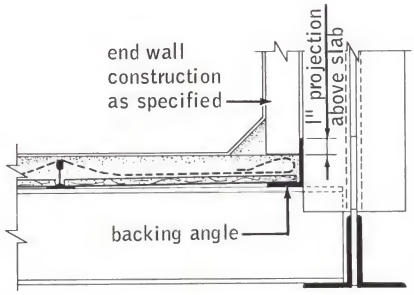
(1) Expansion strips are not recommended for seismic Approved Diaphragm design. See page 12 for Seismic Detail.

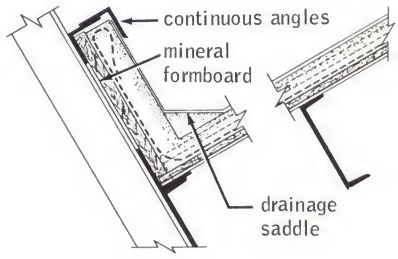
details

application over beams and bar joists

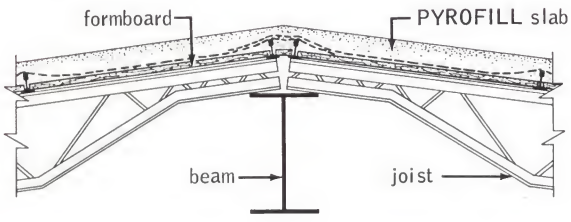
curbs



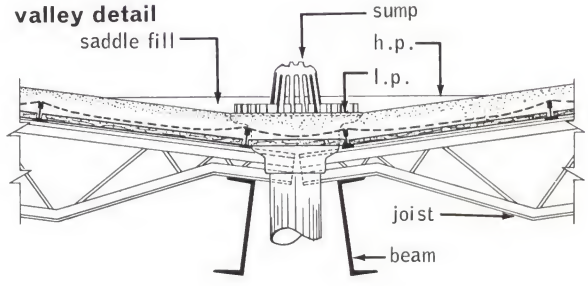




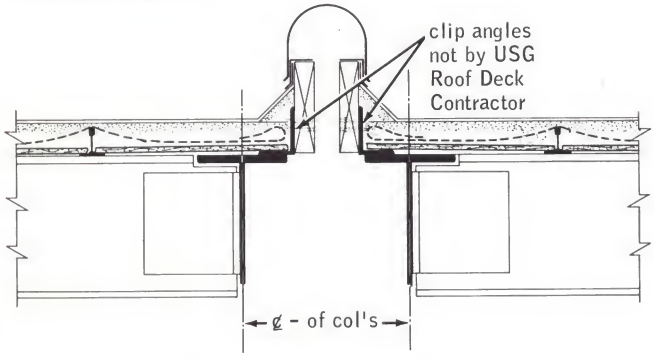
ridge detail



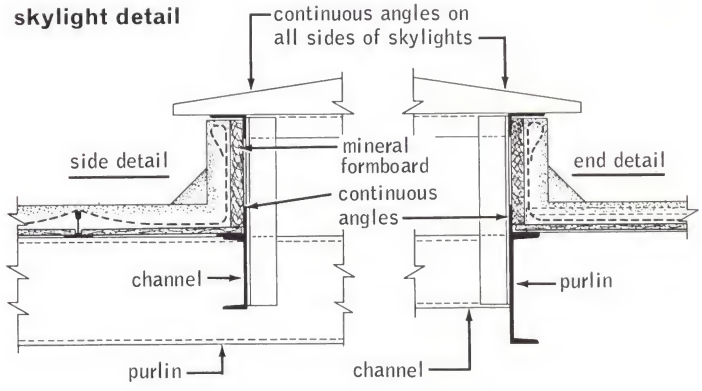
valley detail



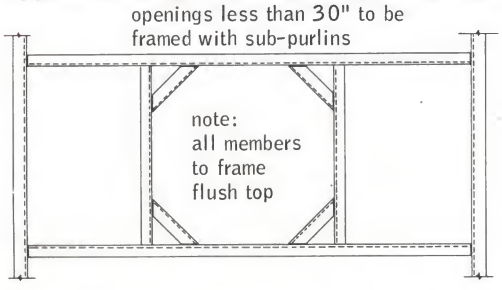
expansion joint



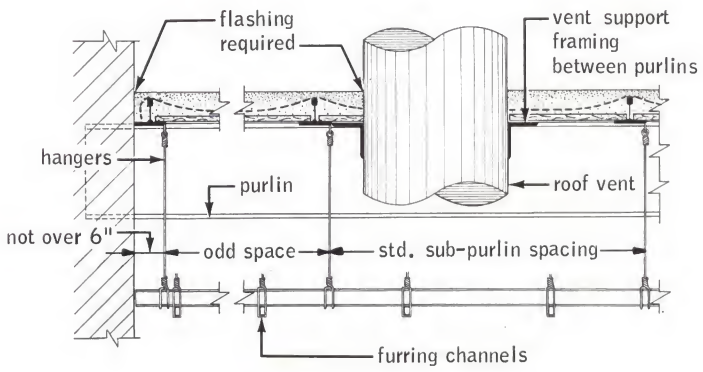
skylight detail



typical framing around openings larger than 30″



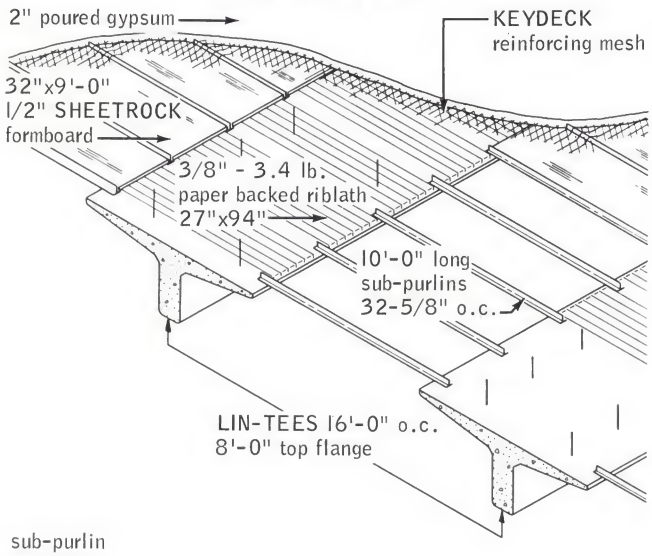
note: — all miscellaneous structural steel, such as channels, wood nailers, and angles, hangers & channel grillage, attached to roof framing are not by USG Roof Deck Contractor.

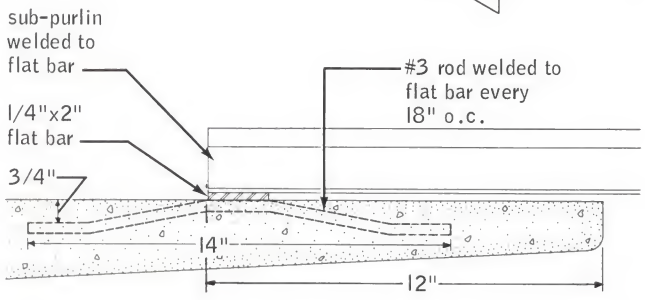


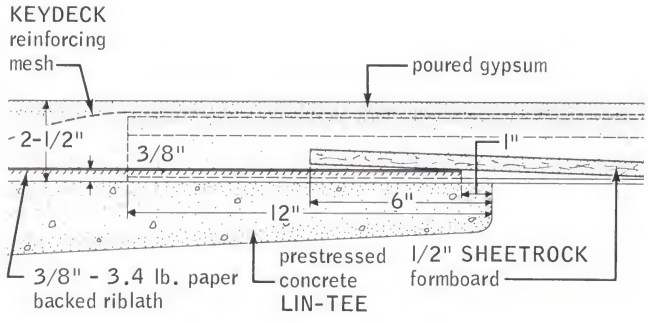
suspended ceilings

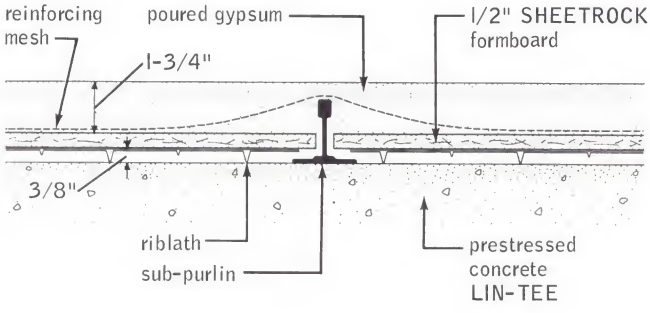
details

LIN-TEE system

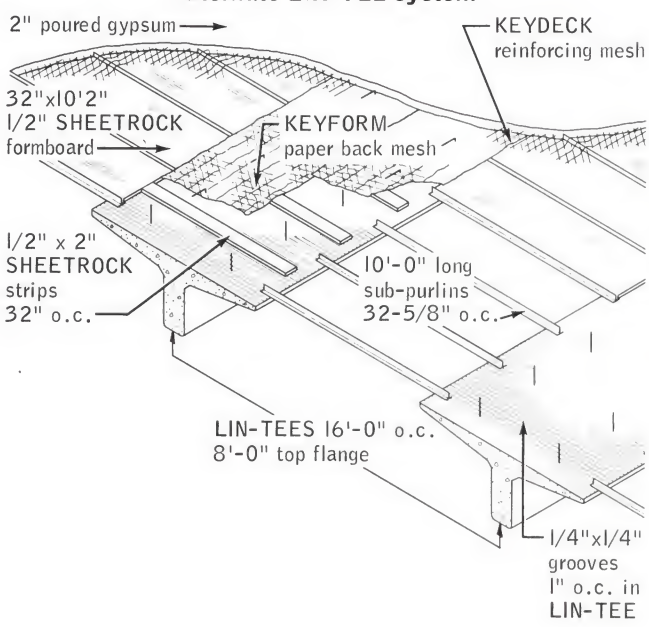


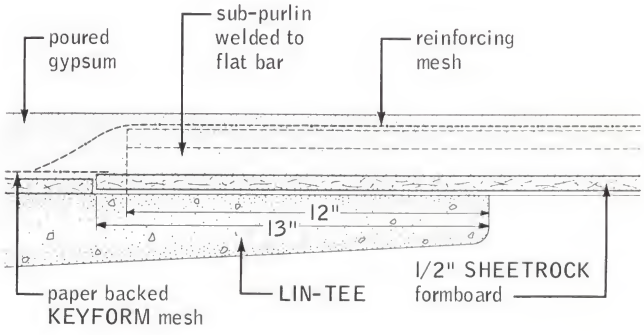


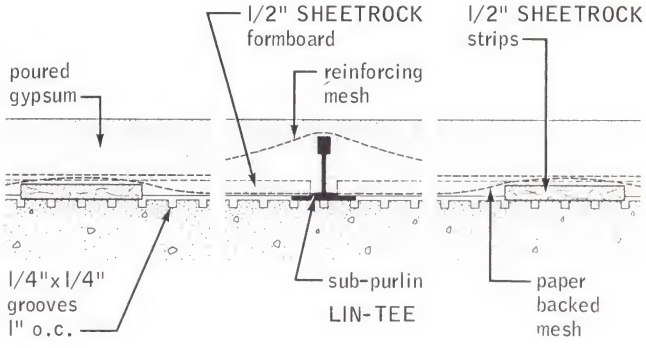




alternate LIN-TEE system



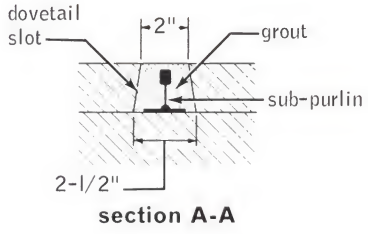




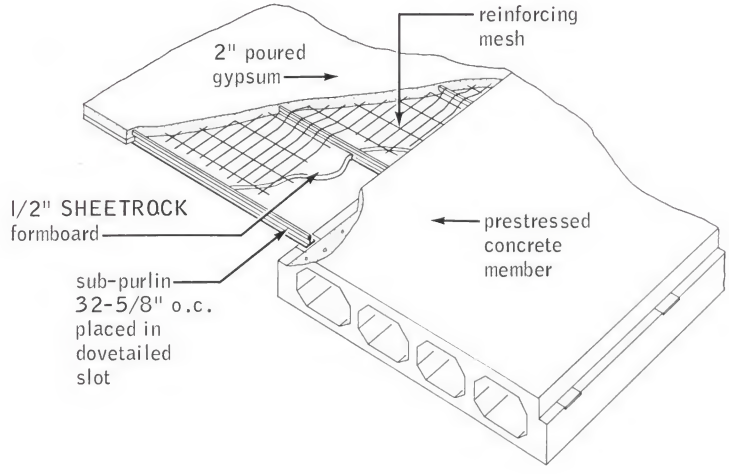
Note: In the following areas, the lath may be omitted and the gypsum slab poured directly on the concrete Tee Sections, providing the slabs are left open to dry before roofing is applied: the entire states of Arizona and New Mexico; that part of Texas west of and including the counties of Ector, Winkler, Ward, Reeves, Jeff Davis, and Brewster; that part of California south of and including the counties of Orange and Riverside, and the city of Los Angeles.

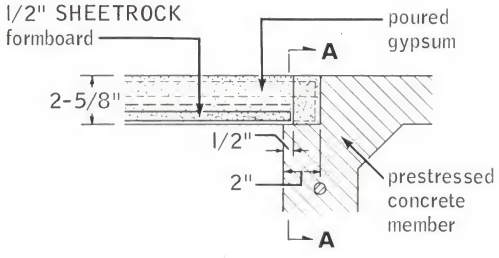
details

DYNACORE system *(not recommended for seismic design)*



section A-A





sub-purlins for gypsum concrete slab suspended between prestressed members—simple span

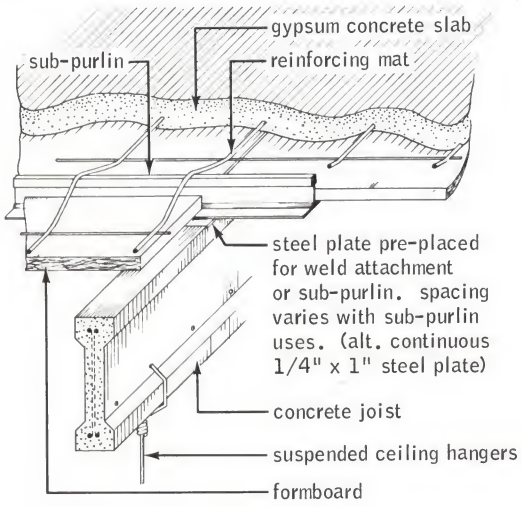
Values shown in gray areas are based on properties determined by each sub-purlin manufacturer with fs @ 20,000 psi. Values shown in white are for fs @ 33,000 psi. Sub-purlins spaced 2′ 8⅝″ on center. M=⅛ WL except as noted. Exceptions to spacing and slab thickness are noted in table. E=29 x 10^6 psi.

sub-purlin		3′-0″	3′-6″	4′-0″	4′-6″	5′-0″	5′-6″	6′-0″	6′-6″	7′-0″	7′-6″	8′-0″	8′-6″	9′-0″	9′-6″	10′-0″
1120 (C)		**60** 99	**44** 72	**33** 53•	37•											
112 (I)		**68**	**50** 83	**38** 60•	**30** 42•	31•										
158 (C) (I)		**93**	**68**	**52** 79•	**41** 60•	**33** 43•	32•									
168 (C) (I)			**95**	**73**	**58** 80•	**47** 62•	**38** 46•	**32** 36•								
178 (C) (I)					**82**	**66** 85•	**55** 67•	**46** 53•	**39** 41•	**33** 33•	**27** 27•					
200 (C) (I)						**90**	**74** 87•	**62** 71•	**53** 57•	**45** 46•	**37•** 37•	**30•** 30•				
218 (C) (I)	spacing 2′-9″					**100**	**83** 100•	**70** 81•	**59** 67•	**51** 54•	**44** 44•	**36•** 36•	**30•** 30•			
228 (C) (I)	spacing 2′-9″							**98**	**84** 90•	**72** 75•	**63** 64•	**52•** 52•	**44•** 44•	**37•** 37•	**31•** 31•	**27•** 27•
258 (C) (I)	spacing 2′-9″—min. thickness=3″ total									**104**	**91** 100•	**80** 84•	**70•** 70•	**59•** 59•	**50•** 50•	**43•** 43•

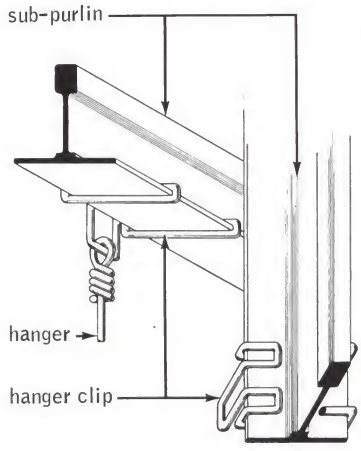
1. Loads are less than L/240. Deflection based on $D=\frac{.01302\ WL^4}{EI}$.
2. Loads marked • are limited by deflection and are calculated by U.S.G.
3. To determine total safe load for a maximum fiber stress of 18,000 psi, use 90% of tabulated load shown for 20,000 psi fiber stress.
4. For tee spacing of 24⅝″ multiply values shown by 1.327.
5. (C) Connors Steel Division, H. K. Porter Co., Inc.—(I) Inland Steel Company

miscellaneous data

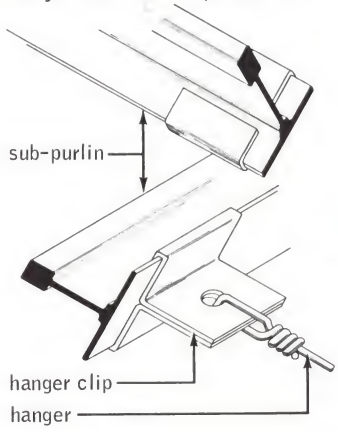
roof attachment to concrete joists



hanger details for suspended ceilings

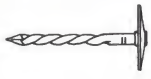


hanger and hanger clips - not by USG Roof Deck Contractors (a conventional lathers wire tie may be used for suspension)



PYROFILL nail holding power (see footnotes)

resistance to direct pull in pounds per nail for penetration shown

type of nail		Screw-Tite squarehead (B)	La Belle square cut nails (D)		gypsum deck nails (A) (C)		wire nails
			6d common	6d cornice	1½"	1¾"	7d common
finish of nail tested		plain	plain	plain	plain	plain	plain
head dimension		15/16" square	.27"x.21"	.34"x.28"	dia. .975"	dia. .975"	¼" round
shank at head		.125"	.19"x.114"	.23"x.14"	.152"x.103"	.197"x.125"	11.5 ga.
shank at point		.125"	.10"x.07"	.13"x.08"	.092"x.071"	.125"x.115"	11.5 ga.
lengths		1¾"	2"	2"	1½"	1¾"	2¼"
penetration		1½"	1.75"	1.75"	1.25"	1.50"	2.0"
holding power in PYROFILL	wet (1 day)	46.5	26.5	34.0	14.5	28.0	—
	dry	62.0	226.0	180.0	116.0	181.0	28.0
details							

NOTES: 1. Values are from tests conducted at USG Research Laboratories and provide relative holding power for the type of nail shown. (Under conditions described in Notes 2 & 3 below: Selection of nails will depend on the roofing manufacturer's recommendations and spacing of nails.)
2. Nails were driven by hand with a hammer and withdrawn immediately by means of a weighted lever arm.
3. The dry density of the PYROFILL was approximately 52 pounds per cu. ft.
4. Other nails of the same shank size and penetration should give equal holding power.
(A) Manufactured by Crescent Brass & Pin Co., Detroit.
(B) Manufactured by Independent Nail & Packing Co., Bridgewater, Mass.
(C) Manufactured by Simplex Nail & Manufacturing Corp., Americus, Ga.
(D) Manufactured by Wheeling Corrugating Co., Wheeling, W. Va.

THERMOFILL nail holding power

resistance to direct pull in pounds per nail

age of concrete when nailed	5d common			La Belle square cut nail, non-galvanized (Wheeling) 5d shingle			6d common			6d shingle		
	nail pulled after			nail pulled after			nail pulled after			nail pulled after		
	1 day	7 days	dry	1 day	7 days	dry	1 day	7 days	dry	1 day	7 days	dry
4 hours	19	50	340	21	37	327	20	55	318	22	65	344
3½ days	29	56	327	32	55	327	32	74	427	30	63	295
7 days	18	50	288	18	51	280	29	76	275	30	70	423
penetration		1½"			1½"			1¾"			1¾"	

NOTES: 1. Dry density of the THERMOFILL slab was 40 lb./cu. ft.
2. Nails were hand driven with a hammer, 4 hours, 3½ days and 7 days after the slab was poured.
3. THERMOFILL dried at a normal rate under winter room temperature and humidity, and was substantially dry at 6 weeks.
4. Nails were removed hydraulically 1 day, 7 days, and 6 weeks after nailing.
5. Values are average results of tests conducted at U.S.G. Research Laboratories.

approved seismic diaphragm

description

Gypsum Concrete Roof Decks consisting of incombustible, reinforced gypsum concrete slabs poured in place over permanent formboards have been approved as rigid diaphragms in the City of Los Angeles, County of Los Angeles and many of the 1,000 cities which use the Uniform Building Code. See Allowable Diaphragm Values in the Technical Data table, page 13. See formboard data on pages 2, 3 and 4.

Design procedure is similar to that of reinforced concrete, using the gypsum stress values allowed by the applicable code. Expensive rod or angle bracing systems can be eliminated, making PYROFILL Roof Deck very low in cost. See Diaphragm Details, page 12.

diaphragm tests

Large Scale Diaphragm Tests—S. B. Barnes, prominent West Coast Consulting Engineer, in 1954, 1956, 1957 and 1962 designed and executed four separate series of horizontal load tests on a total of 31 panels, one panel was 16′ x 48′. The testing was done by Frederick J. Converse, Professor of Civil Engineering, California Institute of Technology, and by the Smith-Emery Testing Laboratory of Los Angeles.

PYROFILL Gypsum Roof Deck panels were subjected to heavy vibrating loads in the comprehensive tests.

Extracts from the Barnes Report of this test (1): "The picture gives an idea of the size and setting of 'Galloping Gertie'. The rotating wheels balance the vertical components at the center of the wheel. However, the location of the center of horizontal thrust was high above the test slab and the whole machine was eccentric in its position on the panel. This produced a severe vertical rocking. The recording instruments indicated that the vertical component was about equal to and in some cases greater than the horizontal component. This was anticipated and was felt to be proper since earthquakes usually have both horizontal and vertical components.

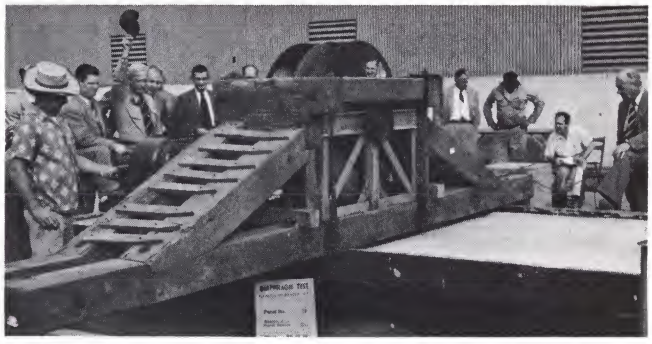
"When static test loading was continued after vibration the ultimate strength of panels was affected very little."

Engineer Barnes states "This machine, in my opinion, produced vibrations more severe and over a longer period of time than would be anticipated in most earthquakes."

The highly favorable performance of PYROFILL, Roof Deck as a rigid diaphragm in each series of tests resulted in a recommendation by Engineer Barnes for increases in the shear and dowel values then allowed by the Building codes.

classes—allowed values

Class "A" PYROFILL containing not more than 12½% wood fiber has a minimum ultimate compressive strength of 500 lbs. per sq. in.



vibrating machine

Class "B" PYROFILL containing not more than 3% wood fiber has a minimum ultimate compressive strength of 1000 lbs. per sq. in. The shear value on each Class of PYROFILL Roof Deck currently allowed under the various codes is stated in the following paragraphs.

City of Los Angeles, County of Los Angeles and Areas following the Uniform Building Code currently allow shear values shown in the table, page 13.

City of San Francisco allows the Bulb Tee shear values shown in the table below, but has not acted on the Keydeck Tee shear values.

Title 21 allows the use of poured gypsum roofs for diaphragms. Consult your local U.S.G. representative for values.

uniform building code

The Research Committee of the International Conference of Building Officials recommends that shear in poured gypsum concrete diaphragms be determined by the formula

$$Q = [.16f_g t\, C_1 + 1{,}000\,(k_1 d_1 + k_2 d_2)]C_2$$

Q = Allowable shear per foot on diaphragm in pounds per lineal foot which includes a one-third increase for short time loading.

f_g = Compressive strength of gypsum.

C_1 = 1.0 for Class A gypsum; 1.5 for Class B gypsum.

t = Thickness of gypsum between subpurlins in inches.

k_1 = Number of mesh wires per foot passing over subpurlins.

d_1 = Diameter of mesh wires passing over subpurlins in inches.

k_2 = Number of mesh wires per foot parallel to subpurlins.

k_2 = 8.5 for Keydeck mesh.

d_2 = Diameter of mesh wires parallel to subpurlins.

C_2 = 1.4 for Class A gypsum using trussed tee and one for Class B gypsum.

The application of this equation for commonly used thicknesses and mesh types for each class of gypsum are shown in the table, page 13.

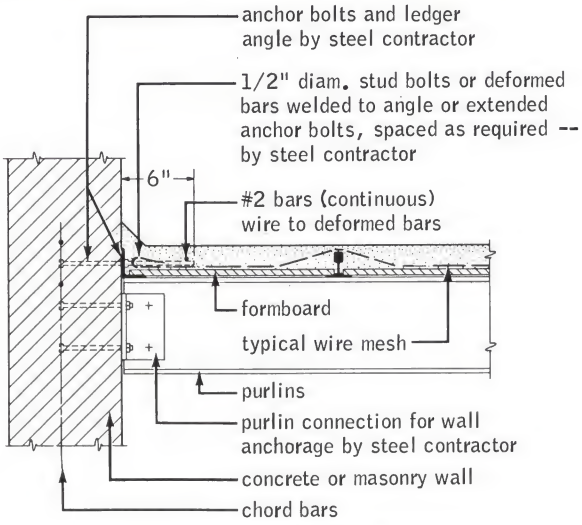
(1) Copy available upon request.

seismic details

scale: ¾″ =1′-0″

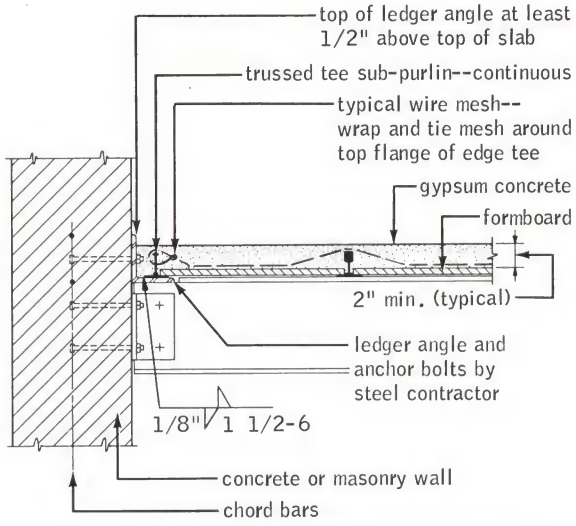
application over beams and bar joist

sub-purlins parallel to shear resisting elements

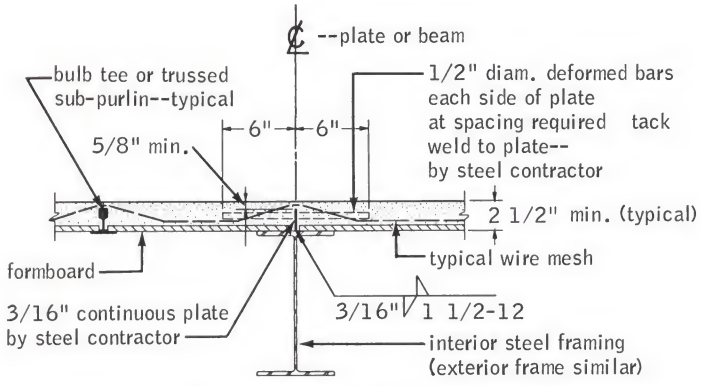


rod dowel attachment

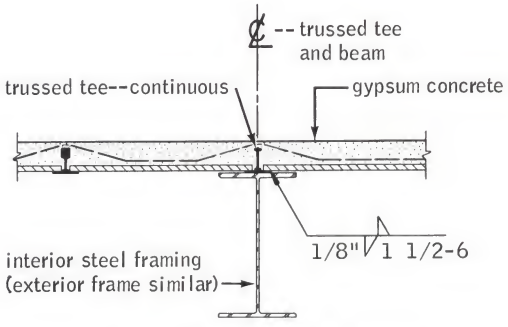
Trussed Tees may be used to transmit shears and are allowed by Uniform Code 840 lbs. and 1140 lbs. per lineal foot in dowel value with Class A and Class B PYROFILL respectively. Uniform Code also allows 466 lbs. dowel value for ½″ bolts with 5″ embedment.



trussed tee dowel attachment

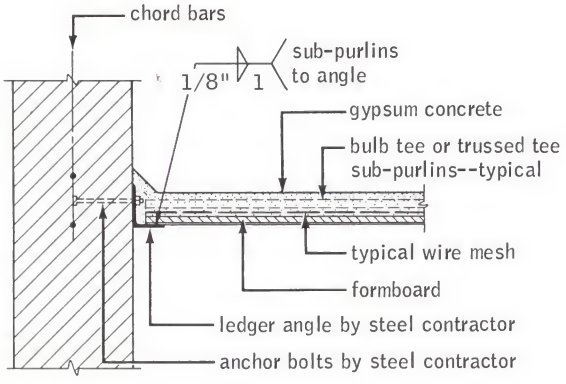


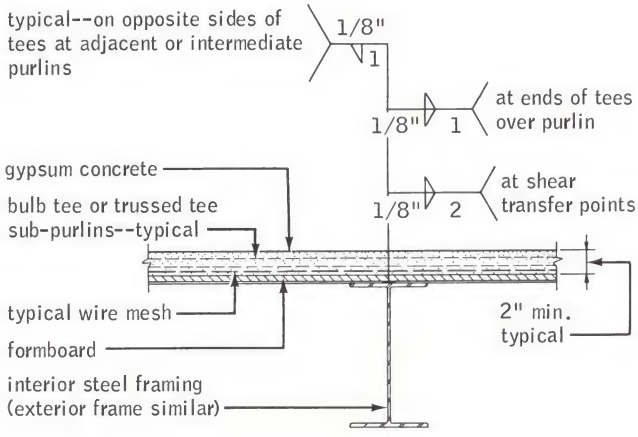
rod dowel at beam



trussed tee dowel at beam

sub-purlins perpendicular to shear resisting elements





seismic design data

sub-purlins for PYROFILL and THERMOFILL slabs over formboards

KEYDECK trussed tee 2′-8¾″ o.c. *(see page 5 for rolled tee sections)*

type	lbs./ lin. ft.	total safe uniform load in lbs. per sq. ft.—continuous over three spans (5)																
		3′6″	4′0″	4′6″	5′0″	5′6″	6′0″	6′6″	7′0″	7′6″	8′0″	8′6″	9′0″	9′6″	10′0″	10′6″	11′0″	11′6″	12′0″
5-9-18-1½	.78	91	70	55	45	37	(31)												
5-9-18-2	.78		92	73	59	49	41	(35)											
4-5-18-2	.90		95	75	61	50	42	36	(31)										
1-5-17-2	1.26				84	69	58	50	43	37	33	(29)							
1-3-17-2½	1.32					90	75	64	55	48	42	37	(33)						
00-5-15-2	1.58					87	73	62	54	47	41	37	33	29	(26)				
00-3-15-2½	1.64						94	81	69	60	53	47	42	38	34	(31)			
000-5-14-2	1.78					97	82	70	60	52	46	41	36	33	30	(27)			
000-3-14-2½	1.85							91	78	68	60	53	47	43	38	35	32	(29)	

Values shown are from data furnished by Keystone Steel & Wire Company

(1) Oven-dry compressive strength of gypsum shall not be less than 500 p.s.i. when tested in conformace with ASTM C472-61.
(2) The allowable loads may be extrapolated in proportion to the square of the spans for spans not tabulated. For keydeck subpurlins supported on a single span or continuous over two spans, the allowable loads are 81% of those tabulated.
(3) The minimum distance between the top of the form and the bottom of the top wires of the Keydeck Subpurlin shall be not less than ¾-inch.
(4) The total thickness of the gypsum concrete above the form shall be not less than 2 inches and the thickness over the subpurlin shall be not less than ⅝-inch.
(5) Loads indicated thus ( ) exceed the maximum permitted span and are to be used for extrapolation only.
(6) Formboard thicknesses for use with various depths of subpurlins shown shall not exceed the following maximums:
½″ for 1½″ deep subpurlin. ¾″ for 2″ deep subpurlin. 1¼″ for 2½″ deep subpurlin.

allowable shear values for gypsum concrete roof decks

deck type (3)	compressive strength psi	gypsum concrete thickness, in.	mesh	allowable shear values, lbs. per lin. ft. bulb tees	keydeck tee
PYROFILL class A (1)	500	2″	4″x8″ #12—#14	600	840
		2″	6″x6″ #10—#10	700	980
		2″	KEYDECK	760	1060
		2½″	4″x8″ #12—#14	640	890
		2½″	6″x6″ #10—#10	740	1040
		2½″	KEYDECK	800	1120
PYROFILL class B (1)	1000	2″	4″x8″ #12—#14	920	920
		2″	6″x6″ #10—#10	1020	1020
		2″	KEYDECK	1080	1080
		2½″	4″x8″ #12—#14	1040	1040
		2½″	6″x6″ #10—#10	1140	1140
		2½″	KEYDECK	1200	1200
THERMOFILL class A (2)	500	2″	4″x8″ #12—#14	510	710
		2″	6″x6″ #10—#10	590	840
		2″	KEYDECK	650	910
		2½″	4″x8″ #12—#14	540	760
		2½″	6″x6″ #10—#10	630	890
		2½″	KEYDECK	680	960

NOTE: For availability of Class B PYROFILL and THERMOFILL check with your local U.S.G. representative.
(1) See Research Recommendation 1269.3 and 1312.2, International Conference of Building Officials.
(2) See Research Recommendation 1683.2, International Conference of Building Officials.
(3) California Administrator Code—Title 21 data varies slightly in shear calculations and field application. Consult your U.S.G. representative for assistance.

allowable shear on anchor bolts and dowels in reinforced gypsum concrete-bulb tee construction

bolt or dowel size, in.	Uniform Building Code		City of Los Angeles	
	embedment, in.	shear, lbs.	embedment, in.	shear, lbs.
⅜ Bolt	4	250	4	325
½ Bolt	4	350	5	450
⅝ Bolt	4	500	5	650
¼ Plain Dowel	6	200	6	250
⅜ Deformed Dowel	6	250	6	325
½ Deformed Dowel	6	350	6	450

NOTE: Embedded Bolts or Dowels not required when keydeck tee construction is used as shown in detail for trussed tee dowel attachment. Also see Note 3 above.

specifications

notes to architect

1. *Formboards should always be stored in a dry place. The normal moisture from a gypsum concrete slab has no effect on the performance of the formboards. Soaking of the formboard prior to the pouring of the slab can result in excessive deflection. The roof covering should be applied as soon as possible after erection to protect the construction from precipitation. Discoloration or staining of the formboard may occur if subjected to prolonged exposure to moisture. If staining will be objectionable, the formboard may be painted; see recommendations below.*

2. Drying—*Gypsum concrete roof slabs dry out from the underside (through the formboard). Adequate heat and ventilation below the slab are required to permit the escape of this moisture. In buildings without windows or with fixed windows, adequate mechanical (forced) ventilation is required to remove all construction moisture. Gypsum concrete is not recommended as a fill over concrete slabs, steel decks and other decks of low permeability.*

3. Ventilation *should be provided for any plenum or joist space between all roof deck and ceiling constructions. The venting of enclosed air spaces should be accomplished by natural or artificial means, both during and after construction of the building. Such venting accomplished by roof vents or soffit louvers to the outside does not appreciably affect plenum or interior temperatures. Consult the Heating, Ventilating & Air Conditioning Guide, latest edition, published by the American Society of Heating, Refrigerating & Air Conditioning Engineers, for data on ventilating attic spaces and location of vapor barriers.*

4. Decorating—*Gypsum roof decks provide a presentable undersurface that usually does not require further decorating. Where the formboard is to be left exposed and appearance of the formboard is critical, further decoration may be necessary. Exposed fibrous formboards should be field painted to cover possible water staining and surface discoloration.*

When decoration is desired, painting should not be done until the slab is thoroughly dry. Before painting, the slab should be checked for dryness throughout its entire thickness. An electric type moisture meter can be used if contacts are driven well into interior of slab. Exposed metal, such as sub-purlin flanges, should be protected with a suitable metal primer before finish coats are applied.

For SHEETROCK, USG Acoustical, USG Insulation and USG Mineral Formboards, a breather type paint such as USG TEXOLITE. Alkyd Latex paint is recommended, applied by brushing, rolling or spraying. A fungicide must be added to the TEXOLITE Alkyd Latex—½ oz. of Super Ad-It per gallon of TEXOLITE Alkyd Latex for use on all formboards except asbestos cement formboards. (TEXOLITE Vinyl Exterior paint is recommended on cement asbestos formboard, and does not require additional inhibitor.) For fungicides in other paints, check manufacturer's specific recommendation.*

5. Expansion and Contraction—*PYROFILL and THERMOFILL Roof Decks, like all roof decks, are subject to expansion and contraction due to temperature changes. Bulb tees welded to steel framing limit slab movement that would exert itself at right angles to the direction of the bulb tees. The following is suggested as a guide:*

- **a.** *Provide expansion joints in the deck and the roofing wherever they are provided in the main structure.*
- **b.** *Long narrow buildings should have expansion joints through the deck and the supporting structure spaced not more than 200 ft. apart.*
- **c.** *Wings of "L", "U" and "T"-shaped buildings should be separated with expansion joints.*
- **d.** *A mineral fiber filler strip should be installed at all structural roof penetrations and at walls crossing the ends of sub-purlins. See details on pages 6 and 7; note seismic design recommendations.*

To resolve specific problems, the coefficients of linear expansion should be considered. They are: for gypsum concrete, .0000085 in./in./F°; for steel, .0000065 in./in./F°. See Steel Construction Manual of the A.I.S.C., for method of calculating expansion of bodies by heat.

6. Uplift—*All roof decks are subject to uplift forces and must be anchored to supports to resist this uplift. In developing adequate resistance, the total dead load of the roof deck can be considered as part of the total resistance. In laboratory tests, PYROFILL Roof Decks, using steel rails or bulb tee subpurlins welded to the steel framing, have an average uplift resistance equivalent to more than 125 lbs. per sq. ft.*

Reference: Armour Research Foundation Test M1068.

7. Roofing—*During application, PYROFILL and THERMOFILL Roof Decks withstand the effects of normal rainfall, snow, freezing and thawing; however, they should be covered as soon as practicable. The waterproof (built-up type) roof covering should be applied as soon as the top surface of the slab is reasonably dry; i.e., when there is no visible moisture gloss. For the application of built-up roof covering, U.S.G. recommends that a 43# base sheet, or equal, be nailed dry for the first ply. A gypsum deck nail with a metal roofing cap attached is recommended. See table of nail holding values, page 10.*

8. Heavy Loads—*Although the reinforced PYROFILL gypsum deck slab will carry loads in excess of 100 lbs. per sq. ft. with an adequate safety factor, the sub-purlins or bar joists govern the safe load limit. All superimposed concentrated loads, such as flagpole bases, water tanks and ventilating fans, must be directly or indirectly supported on steel framing, not on the gypsum slab.*

9. Steep Roofs—*PYROFILL and THERMOFILL roof slabs are designed to receive built-up roof coverings. On steep roofs, where slate, ceramic tile or rigid type shingle roof coverings are required, the use of USG Metal Edge Gypsum Plank is recommended (see separate USG Systems Folder).*

10. Suspended Ceilings—*Suspended ceilings under gypsum roof decks should be hung from the structural steel frame. If they are hung from the roof deck, the hangers should be attached to the sub-purlins, never to the gypsum slab alone. When hung from the sub-purlins, the sub-purlins must be capable of supporting the total weight including the ceiling load with a resultant deflection not to exceed 1/360 of their span. Attachment hangers and channel grillage are not furnished by the USG Roof Deck Contractor.*

The most expedient way to obtain additional information on fire resistance ratings, sound transmission or details not covered in this publication is to direct inquires to: UNITED STATES GYPSUM, Industrial Roof Decks Department, 101 S. Wacker Dr., Chicago, Ill., 60606.

*T.M. Reg. U.S. Pat. Off.

scope—The contractor shall furnish all labor, material and equipment and install completely in accordance with the manufacturers' recommendations the poured gypsum roof decks, together with cants, curbs and drainage fills as shown and specified. Approved shop drawings are required before work proceeds.

general conditions

All formboards and dry fill, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements. No more formboard shall be laid than can be covered by a completed slab on the same day.

materials

a. *Steel Sub-Purlins*—Steel sub-purlins shall be an approved type capable of carrying the required dead load and live load, all to be cut to length and shop painted with one coat of an approved paint.

b. *Formboards*—Permanent formboards shall be (select as required):

1. SHEETROCK formboards (½″x32″) (½″x48″) wide, treated, in lengths equal to main purlin spacings. Up to 12′-0″ lengths maximum.
2. Plastic-Faced SHEETROCK Formboard ½″x32″x8′, treated.
3. USG Acoustical Formboard, 1″x12″x24″ for sub-purlins spaced 24⅝″ o.c.
4. USG Insulation Formboard 1″x32″ or 36″ or 48″ (see page 3), also ¾″x32″, in lengths equal to main purlin spacings. Up to 12′-0″ lengths maximum.
5. FIRECODE Mineral Fiber Formboard 1″x24″ or 32″ wide, in lengths equal to main purlin spacings. Up to 8′-0″ lengths maximum.
6. USG Glass Mineral Fiber Formboard (available on West Coast only) 1″ or 1½″x24″ or 32″ wide x 48″ long. Galvanized or painted sheet metal tees, 24″ or 32″, shall be placed in each formboard joint to provide end support where not supported by roof framing.
7. Asbestos Cement Formboard ¼″x32″x48″.

c. *Reinforcing Mesh*

Over Sub-Purlins—Reinforcement in the poured gypsum slab shall be 48-1214 galvanized, welded wire mesh or KEYDECK galvanized, woven wire mesh. The effective cross-sectional area of reinforcing mesh, at right angles to the sub-purlins, shall be not less than 0.026 sq. in. per ft. of mesh width.

Over LIN-TEE—KEYFORM woven reinforcing mesh shall be made from 1½″x18 ga. galvanized mesh with 18 ga. galvanized longitudinal wires 3″ o.c. and waterproof paper backing complying with Federal Spec. UU-P147b, Type 1, Class B (required only for alternate LIN-TEE system).

d. *Paper Top Riblath*—Riblath to be ⅜″ 3.4 Riblath (with paper on top side) 27″ wide by length equal to 2″ shorter than width of concrete members (required only for LIN-TEE system).

e. *Gypsum Concrete*—Gypsum concrete shall be (PYROFILL) (THERMOFILL).

f. *Prestressed Concrete Members*—As furnished by fabricator and in accordance with the latest design recommendations of the joint ACI-ASCE committee. For alternate LIN-TEE system tees shall have slots ¼″x¼″ across entire width of tee. Slot spacing: 1″ o.c.

g. *Galvanized or painted sheet metal cross tees.*

installation—steel framing system

1. Steel Sub-Purlins—Place and weld each sub-purlin to main purlins at each contact point, using fillet welds ½″ minimum length placed on alternate sides of sub-purlins where accessible. All end joints are to bear on roof supports (stagger the line of end joints.) (See page 12 for welding specifications in seismic design.)

2. Formboards—Place formboards on sub-purlin flanges with all end or cross-joints supported, forms to fit neatly on all four edges. Cut forms to fit at walls, curbs and openings as required. Install approved sheet metal tees to support end joints of square edge formboards not supported by roof framing.

3. Reinforcement—Place 48-1214 reinforcing mesh with the 12 ga. wires at right angles to sub-purlins. If KEYDECK is used, place 16 ga. wires at right angles to sub-purlins. Lap mesh ends at least 6″. Do not lap sides of mesh. In seismic design, lap mesh at least 6″ at sides and ends. Cut mesh to fit at wall, curbs and openings, and carry mesh into all areas where gypsum concrete is poured.

4. Gypsum concrete—Mix gypsum concrete with clean water only, as directed on bags. Pour over formboards to minimum depth of (1½″) (2″). Minimum cover over sub-purlins shall be ¼″. Screed all surfaces to a smooth, even plane ready to receive waterproof roof covering specified in another section. Pour cants, curbs and drainage fills as shown or required. After pouring, leave roof deck free and clean for other trades.

installation—LIN-TEE system

1. Steel Sub-Purlins—Place with a minimum 12″ overlap on slabs and attach each sub-purlin to top of LIN-TEES by welding to an embedded steel bar or plate (installed by LIN-TEE manufacturer) with a ¾″ long fillet weld on both sides of the sub-purlin at both ends. Spacing as specified 24⅝″ or 32⅝″.

2. Riblath—Place ⅜″ 3.4 Riblath sheets, ribs down, over concrete members between sub-purlin so ends of sheets are within 1″ of each edge of concrete tees. Bend #3 reinforcing rods (installed by LIN-TEE manufacturer) down over Riblath.

3. Formboards—Place formboards on sub-purlin flanges. Formboard must extend to end of sub-purlins and rest on top of riblath a minimum of 4″. Cut forms to fit at walls, curbs and openings, as required.

4. Reinforcement—Place reinforcing mesh with heaviest gauge wires (12 ga. or 16 ga.) at right angles to sub-purlins over entire area. Lap ends of mesh 6″. Gap sides of mesh at least 3″. Gaps must not occur along ends of sub-purlins.

5. Gypsum Concrete—(same as in steel framing system).

installation—alternate LIN-TEE system

1. Steel Sub-Purlins—Place with a minimum 12″ overlap on slabs and weld each sub-purlin to a metal plate or continuous metal strip inserted into the concrete member at the time of its fabrication. Use a minimum ¾″ fillet weld on both sides of sub-purlins at both ends. Spacing as specified 24⅝″ or 32⅝″. (See page 12 for welding specifications in seismic design.)

2. Formboards—Formboard lengths to be 2″ longer than sub-purlin section. Place formboard on sub-purlin flanges with all ends or cross-joints supported. Install so board extends approximately 1″ beyond both ends of sub-purlin. Place 2″ strips of ½″ formboard across LIN-TEE every 32″ o.c.

3. **Reinforcing Mesh**

Over Sub-Purlins—Place 48-1214 reinforcing mesh with the 12 ga. wires at right angles to sub-purlins. If KEYDECK is used, place 16 ga. wires at right angles to sub-purlins. Lap mesh ends at least 6″. Do not lap sides of mesh. Mesh must extend over ends at sub-purlin a minimum of 6″. Cut mesh to fit all wall, curbs and openings and carry mesh into all areas where gypsum concrete is poured.

Over LIN-TEE—Place KEYFORM mesh with the 18 ga. wires parallel with length of LIN-TEE. Lap mesh over protruding ends of formboard flush with sub-purlin ends. Lap mesh a minimum of 2″ at center of tee. Bend #3 reinforcing rod, (installed by LIN-TEE manufacturer) down over mesh.

4. **Gypsum Concrete:** (same as in steel framing system).

installation—DYNACORE system

1. **Steel Sub-Purlins**—Place sub-purlins between slabs by grouting each end of the sub-purlin into a dovetailed slot (furnished in prestressed member). Allow a minimum 2″ bearing for the ends. Spacing as specified 24⅝″ or 32⅝″.

2. **Formboards**—Place formboards on sub-purlin flanges with all ends or cross-joints supported, forms to fit neatly on all four edges. Cut forms to fit at walls, curbs and openings as required.

3. **Reinforcement**—Place reinforcing mesh with heaviest gauge wires (12 ga. or 16 ga.) at right angles to sub-purlins. End laps to be at least 6″, side laps to be 4″.

4. **Gypsum Concrete**—(Same as in steel framing system).

UNITED STATES GYPSUM

roof decks

C

USG* Metal Edge Gypsum Plank

1656

A.I.A. File No. 4-K

description

In this assembly, incombustible, precast USG Metal Edge Gypsum Plank is quickly and easily erected over steel, concrete or wood joists to form a high strength, structural reinforced roof deck ready for the application of built-up roofing, shingle or tile. The gypsum planks are laid dry, without grout, by interlocking tongue-and-groove metal edges. The units are attached directly through the plank to wood or concrete joists or clipped to steel purlins or bar joists with galvanized anchor clips nailed to the metal edging. Curbs, cants and saddles are easily formed using PYROFILL* Gypsum Concrete.

This time-proven reliable roof deck construction provides excellent resistance to lateral and uplift forces and can be used on a variety of purlin spacings. The system will span up to 7′ under normal design roof loads and may be applied on flat, pitched and curved roofs.

USG Precast Metal Edge Gypsum Plank is available in two types: new MEP-4, offering economy of section, for spans up to 4′, and MEP-7 for spans up to 7′ (see Design Properties, page 2, for load-carrying capacities). Each structural unit, 2″ thick, 15″ wide, 10′ long, weighing 10.5 lbs. per sq. ft., is reinforced with galvanized steel T & G edges and a 16 ga. galvanized wire mat. The top of the plank has a nailable surface for the application of roofing (for nail holding power, see table, page 2). The under surface is readily painted or, if left exposed, provides a highly reflective white gypsum ceiling. USG Metal Edge Gypsum Plank conforms to Federal Specifications SS-S-439 and ASTM C 377-63.

function and utility

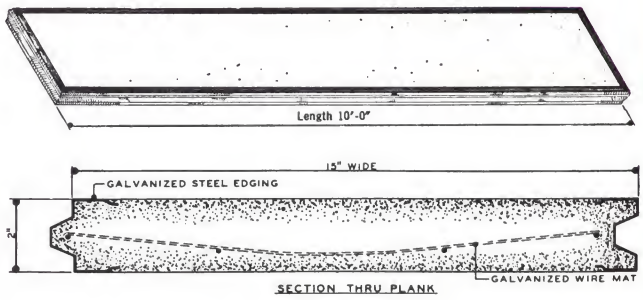
This incombustible reinforced precast plank is suited to all types of construction, for large size or small jobs, and is particularly adaptable where ready availability and economy of simplified all-weather assembly by the general contractor are desired.

High Strength—the interlocking tongue-and-groove edges provide built-in "I" Beam action for superior strength and load distribution. The plank ends may occur off supports, making a uniform spacing of roof purlins possible.

Lateral & Uplift Resistance—laboratory tests show standard attachment clips are capable of supporting lateral loads up to 2100 lbs. per clip. The clip will resist uplift loads of 470 lbs. per clip.

Fast Erection—the large accurately formed edges fit together easily. Each plank is quickly clip attached or anchored in place. No special skills or tools are required for erection.

Versatile—suitable for all normal roof loads on simple or continuous spans. Can be used on flat or pitched roofs or applied to curved or warped areas where the radius of curvature exceeds 150′.



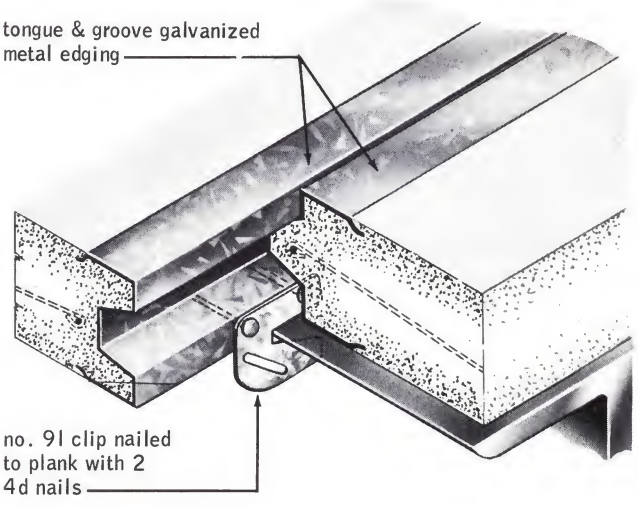
Nailable—the dense gypsum provides good nail-holding power for built-up roofing, shingles or tile.

Economical—simple erection, few components and a minimum waste for cutting (normally 2%) results in an economical precast roof assembly.

limitations

1. Gypsum plank roofs are practical for all buildings having normal humidity conditions and normal or moderately high temperature conditions. Where continuous high humidity or unusually high temperatures are expected, consult U.S.G.

2. Precautions should be taken to prevent thrust accumulations on steeply pitched roofs (see Specifications, page 4).



A.I.A. File No. 4-K

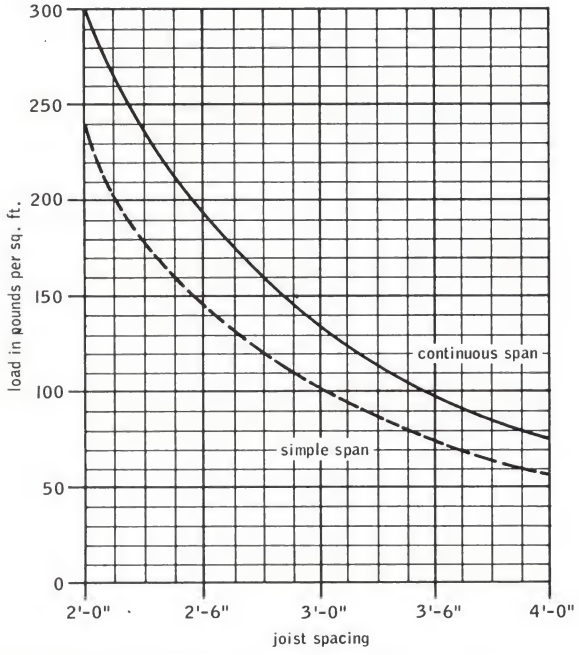
*Reg. U.S. Pat. Off.

technical design data

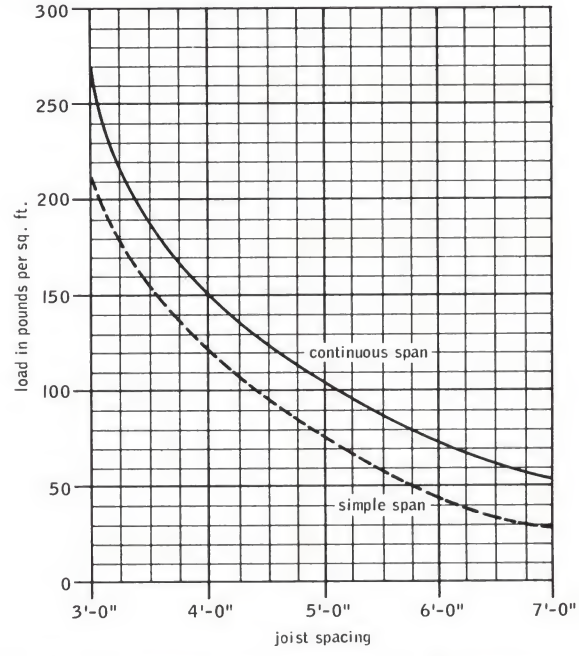
The graphs below indicate the allowable uniformly distributed loads that can be superimposed on USG Metal Edge Plank supported on various joist spacings. No load indicated on the graph will induce deflection greater than 1/240 of the span nor exceed a design stress of 20,000 psi in the metal edging. Load-carrying capacities are shown for simple and continuous span conditions.

allowable uniform superimposed loads

MEP-4



MEP-7



Maximum allowable bending stress in metal edging is 20,000 psi based on simple span bending moment at $\frac{wl^2}{8}$, bending moment for spans greater than 5′-0″ of $\frac{wl^2}{8}$, and bending moment for spans less than 5′-0″ of $\frac{wl^2}{10}$ Deflections are limited to 1/240 of the span and based on deflection constants of 0.013 $\frac{wl^4}{EI}$ for simple spans, 0.0068 $\frac{wl^4}{EI}$ for continuous spans less than 5′-0″, and 0.0054 $\frac{wl^4}{EI}$ for continuous spans of 5′-0″ and greater. Contact your United States Gypsum representative for information on high concentrated loads.

nail-holding power

type of roofing	description of nail	holding power dry plank— 1½″ penetration
built up	1¾″ LaBelle square cut	150 lbs.
	1¾″ independent screw-tite square-hed	46 lbs.
	1½″ galv. roofing nail (1¼″ penetration)	25 lbs.
shingles & tile	bright smooth 9 ga.	107 lbs.
	galvanized smooth 9 ga.	80 lbs.
	copper clout nail, square cut‡	72 lbs.
	bronze smooth round 9 ga.	68 lbs.

Tests conducted at U.S.G. Research Laboratories
‡Mfg. by Atlas Tack Corp., Fairhaven, Mass.

thermal insulation values

"U" Factor for complete roof slab including built-up roof covering (btu per sq. ft., per hr., per deg. F. diff. in temperature)	winter	summer
plank without added insulation	0.51 btu	.43 btu
plank with ½″ added insulation	0.30 btu	.27 btu
plank with 1″ added insulation	0.21 btu	.20 btu

NOTE: The insulation considered is a rigid type wood fiber board (such as USG Roof Insulation) with a "k" factor of .36.

specifications

notes to architect

1. *A thrust angle is recommended for all pitches. However, where resistance is provided by a parapet wall or other structural masonry bearing, the thrust angle may be omitted on pitches 30° or less.*

Standard clip attachment is sufficient for pitches less than 30°. For pitches greater than 30°, use standard clip attachment plus ½″ standard bolts as detailed on page 3. Bolt spacing is determined by resultant thrust per unit of roof area.

Based on the National Building Code vertical live load design requirement of 20 lbs. per sq. ft. on the horizontal projection, ½″ bolts spaced one per 30 sq. ft. of roof area will effectively resist the thrust from the resulting total roof load including a shingle weight up to 10 psf. This recommendation applies on pitches from 30° to 75°.

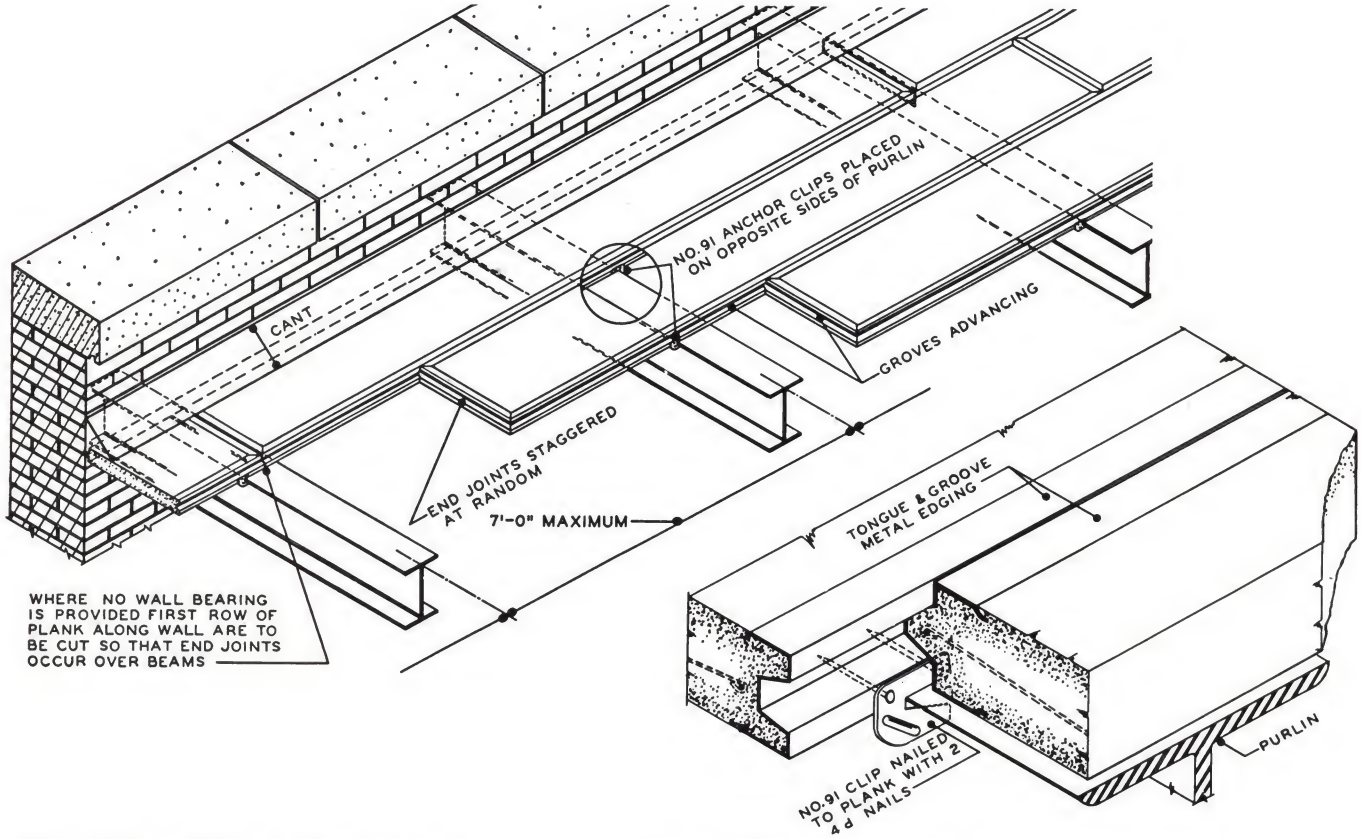
The perimeter of each plane of pitched roof area should be continuously supported. Ridge and eave details are shown on page 3. Support must also be provided along hip and valley members.

2. Built-up Roof. *Apply built-up roof covering in accordance with roofing manufacturer's specifications as soon as possible after the installation of USG Metal Edge Gypsum Plank. Recommended application: nail the first sheet dry using nails providing minimum penetration of 1¼″ into slab. Penetration should not exceed 1½″ (see Nailing Data). If roofing is mopped on, take precaution to prevent leakage of roofing pitch or asphalt through joints in the plank.*

Shingles and Tile. *Asphalt, asbestos, slate, and clay tile shingles may be satisfactorily attached by nailing directly to USG Metal Edge Gypsum Plank.*

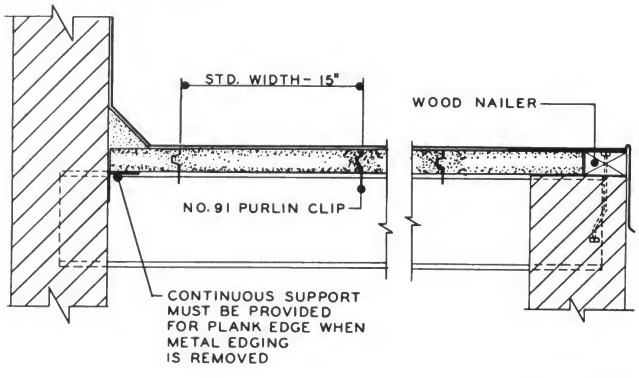
specifications cont. page 4

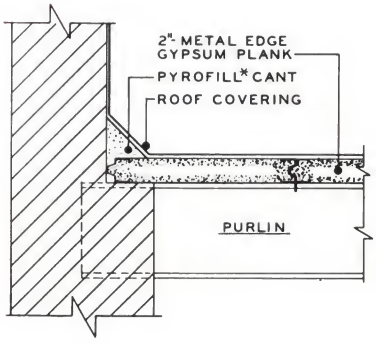
architectural details



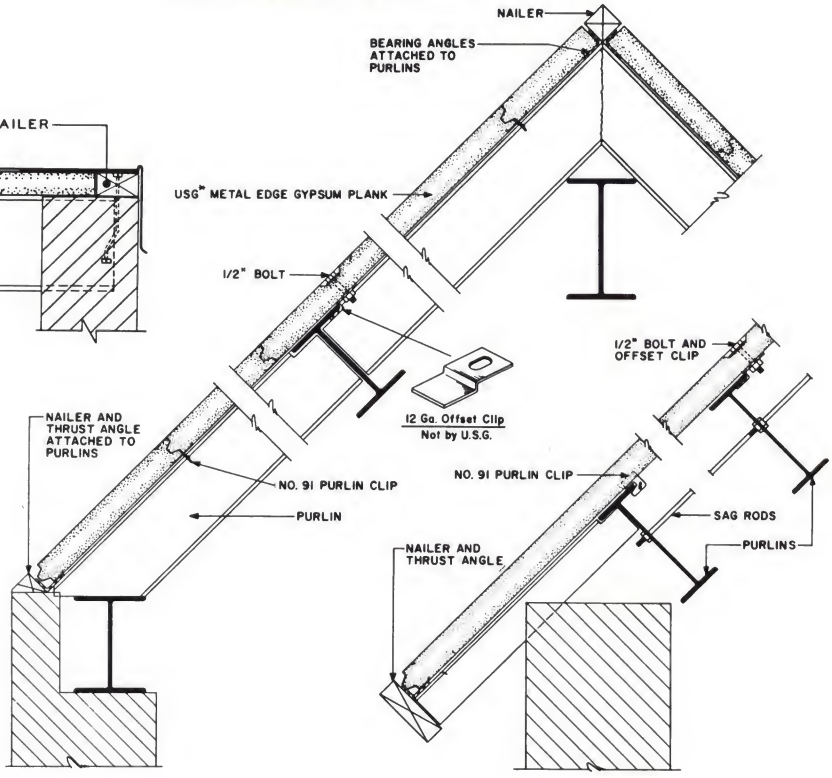
PARAPET & END WALL DETAILS

SCALE: 3/4" = 1'-0"





STEEP PITCH DETAILS



*Reg. U.S. Pat. Off.

At least one ply of roofing felt should be applied to the plank surface after it is in place, prior to shingle or tile application.

Select a nail which will insure as near as possible 1½" penetration into the plank (see Nailing Data.)

Where non-ferrous nails are specified, tapping or punching may be necessary where nails occur at the metal edging.

3. Venting of Enclosed Spaces. *All enclosed spaces beneath roof decks should have outside venting. Such venting by small louvers or openings does not appreciably affect attic temperatures. Please refer to the annual ASHRAE Guide (Chapters 10 and 12) for complete information.*

4. Painting. *Plank must be dry before painting with sealing type oil or latex base paints. Galvanized edging must be freed from grease or oil by cleaning with mineral spirits or a similar solvent.*

Edging can be painted with a zinc dust metal primer of the type meeting Federal Specification TTP-641-b, dated 1-23-53, Type II.

Seal gypsum surfaces with USG Vinyl Sealer or SHEETROCK Sealer.*

Allow metal primer and sealer to dry. Apply one or two coats of GRAND PRIZE latex paint, oil paint, or alkyd flat paint. If it is necessary to paint before plank is dry, prime metal edging as above: Paint edging and gypsum with TEXOLITE* Standard casein paint which has been reinforced by additional fungicide such as 1½ oz. Dowicide "G" per gallon of paste.*

5. *For information on poured-in-place PYROFILL Gypsum Roof Decks, please refer to Gypsum Concrete Roof Systems Folder in this series.*

The most expedient way to obtain additional information on fire ratings, sound transmission or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Industrial Roof Decks Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

general conditions

During job storage, gypsum plank shall be protected from exposure to rain or snow. Handle and store on edge. Use temporary wood planking over gypsum plank areas exposed to repetitive impact or wheel loads during construction.

materials

a. Gypsum plank shall be 2"x15"x10'-0" (MEP-4) (MEP-7) Metal Edge Gypsum Plank, manufactured by United States Gypsum Company.

b. Clips and nails. The manufacturer of the gypsum plank shall furnish standard galvanized clips for attachment to main purlins, (200 clips per 1000 sq. ft.). Nails (2 per clip) shall be 4d galvanized slaters of 1" smooth shank No. 11 ga. galvanized roofing nails.

c. PYROFILL Gypsum Concrete, manufactured by United States Gypsum Company.

erection

Unless otherwise shown on plans, all roof areas shall be covered with gypsum plank, and all curbs, cants, saddles, etc., shall be as shown or specified herein.

Placing of Plank. Start laying plank at one corner of each independent area.

All plank shall be laid dry with marked side up and with the *groove* side advancing. Plank shall be placed on supporting steel with joists tightly interlocked.

Where no wall supports are provided along the longitudinal edge of the starting and final rows of plank, plank in these rows shall be cut so that end joints occur over roof supports. (When supports are provided along the wall, end joints may occur off the supports.)

End joints in adjacent rows shall be staggered not less than 30". Alternate rows shall be started with full units or cut pieces long enough to have bearing at not less than two supports. End of rows shall be finished similarly. The remaining rows can be started (or finished) with cut plank long enough to have not less than one support. Cut plank to fit at walls, ridges, valleys and around openings as indicated or required.

Anchorage of Plank to Supports. Each plank shall be anchored to supporting members by the following method:

a. *Steel Purlins*—Use one galvanized clip at every point of support; where span is 3'-6", or less, use clip on alternate supports. Where possible, alternate position of clips so that each clip is facing in opposite direction to the next one. Secure each clip to plank with 2 nails.

b. *Steel Purlins*—Weld metal edging of plank to supports by flowing weld from the support to the plank edging; exercise care not to burn holes in the edging.

c. *Concrete Joists*—Use power driven studs fired through the plank, 2 studs per plank at each intersection, with penetration into the joist adequate for secure attachment. If steel plates are imbedded in concrete joists, use method in "b" above.

d. *Wood Joists*—Use two 16d nails at each intersection of plank with purlin. Drive nails so that their heads are flush with the top surface of the plank.

e. For pitches greater than 30°, standard #91 anchor clip attachment shall be employed plus additional anchorage provided by ½" standard bolts spaced one per 30 sq. ft. of roof area.

Ridges and Hips. Fill joints at ridges and hips with mortar consisting of USG Gypsum Grouting Cement and sand mixed in the proportion of 1 part cement to 2 parts clean sharp sand by volume.

Cants and Drainage Fills. All curbs, cants, drainage saddles, etc., shall be installed as indicated or required using PYROFILL Gypsum Concrete mixed with clean water only in the proportion of 8 gallons of water to each 80 lb. bag of PYROFILL.

UNITED STATES GYPSUM

column fireproofing

d

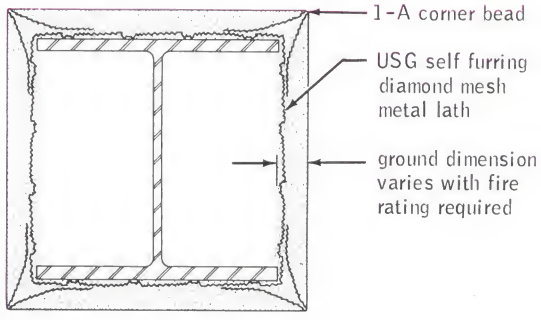
USG* Metal Lath Fireproofing

1706

fire rating	description	test no.	relative cost index	folder reference
4 hrs.	Metal Lath & Plaster Fireprfg—3.4# dm met lath fur ½" from face of col—1⅞" STRUCTO-LITE plaster with fill betw flange face & lath	UL Des 3-4 hr (f)	120	d-1706
4 hrs.	Metal Lath & Plaster Fireprfg—3.4# dm met lath—¾" cr chan spaced 24" o.c. vert—1½" 100:2-100:3 gypsum perlite plaster	UL Des 7-4 hr (f)	109	d-1706
4 hrs.	Metal Lath & Plaster Fireprfg—3.4# sf dm met lath wrapped around col—1¾" STRUCTO-LITE or 100:2-100:3 gypsum perlite plaster	UL Des 6-4 hr (f)	108	d-1706
3 hrs.	Metal Lath & Plaster Fireprfg—3.4# sf dm met lath wrapped around col—1⅞" 100:2-100:3 gypsum perlite plaster	UL Des 6-3 hr (f)	97	d-1706
2 hrs.	Metal Lath & Plaster Fireprfg—3.4# sf met lath wrapped around col—1" 100:2-100:2 gypsum perlite plaster	UL Des 2-2 hr (f)	85	d-1706
1 hr.	Metal Lath & Plaster Fireprfg—3.4# dm met lath wrapped around col—¾" 100:2-100:3 gypsum sand plaster	BMS-92 table 40 (f)	80	d-1706

description

In these assemblies USG* Metal Lath, plain or self-furring, is wire-tied in place around the structural steel columns and plastered with gypsum cement plasters to provide lightweight, thin, compact fireproofing. USG Self-Furring Diamond Mesh Metal Lath utilizes a dimpled design to hold the lath away from the column and allow mechanical keying of the plaster. Plain USG Diamond Mesh Metal Lath furred from the column with ¾" cold rolled channels is an alternate method of construction which can be extended to enclose and protect adjacent ducts and other mechanical components. The fire protection afforded depends on the type of metal lath, the type and proportioning of aggregate to gypsum plaster, and the plaster thickness (see table above).



1-2-3-4 hour
COLUMN FURRING

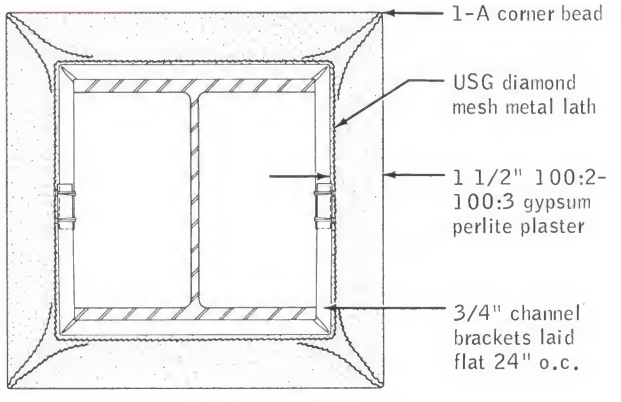
function and utility

Fire Protection—The component parts are incombustible. In addition, the gypsum calcines slowly, retarding flame and resisting heat transfer by giving up its chemically combined water of crystallization. The aggregate acts as a bulking agent for the plaster, and some types serve additionally as an insulating material against heat transfer. For example, lightweight aggregates provide more fire resistance than sand.

Economy—The thin lightweight plaster assembly reduces the dead load and saves floor area. The plaster surface provides the base for final decoration. Increased fire protection of primary structural framing members usually permits lower insurance premiums.

limitations

To resist impact damage from cartage equipment, etc., metal corner reinforcement must be provided at column corners.



4 hr. (ALT. METHOD)

A.I.A. File No. 4-F/29-E

A.I.A. File No. 4-F/29-E

*Reg. U.S. Pat. Off.

specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55° F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *The gypsum plaster thickness, proportioning, and type of aggregate for the fire resistance rating desired should be chosen and shown in the plaster specification.*

fire resistance rating	plaster thickness	proportioning	type of aggregate
4 hrs.	1⅞″	STRUCTO-LITE* Plaster	mill-mixed
4 hrs.	1¾″	STRUCTO-LITE Plaster or 100:2-100:3	mill-mixed or perlite
4 hrs.	1½″	100:2-100:3	perlite
3 hrs.	1⅜″	100:2-100:3	perlite
2 hrs.	1″	100:2-100:2	perlite
1 hr.	¾″	100:2-100:3	perlite

The most expedient way to obtain additional information on fire resistance ratings or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 South Wacker Dr., Chicago, Ill. 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company.

a. Metal Lath shall be 3.4 lb. (Self-Furring) Diamond Mesh Metal Lath 27″ x 96″.

b. USG 1-A Expanded Flange Corner Bead.

c. USG ¾″ Cold Rolled Channel.

d. 18 Ga. Galvanized Tie Wire.

column fireproofing erection

Self-furring Diamond Mesh Lath shall be formed to neatly fit the column and wire tied not over 6″ o.c. at laps. Alternate: Install ¾″ channel spacers or furring brackets (as required for fire ratings) and studs as shown to provide required chase. Tie diamond mesh lath to channels with 18-gauge tie wire. USG 1-A Corner Bead shall be wire-tied to metal lath corners to provide plaster grounds shown.

UNITED STATES GYPSUM

column fireproofing

d

ROCKLATH* Fireproofing

PLASTER BASE

1716

A.I.A. File No. 4-F/29-E

fire rating	description	test no.	relative cost index	folder reference
4 hrs.	Gypsum Lath & Plaster Fireprfg—2 layers ½" ROCKLATH pl base—1" 20-ga hex mesh—1½" 100:2½ gypsum perlite plaster	GA-NBS-278 (f)	125	d-1716
3 hrs.	Gypsum Lath & Plaster Fireprfg—⅜" perf ROCKLATH pl base—1⅜" 100:2½ gypsum perlite plaster	GA-NBS-321 (f)	100	d-1716
3 hrs.	Gypsum Lath & Plaster Fireprfg—⅜" perf ROCKLATH pl base—2" 100:2-100:3 gypsum sand plaster	GA-NBS-344 (f)	106	d-1716
2 hrs.	Gypsum Lath & Plaster Fireprfg—⅜" perf ROCKLATH pl base—1⅜" 100:2-100:3 gypsum sand plaster	GA-NBS-351 (f)	100	d-1716
1 hr.	Gypsum Lath & Plaster Fireprfg—⅜" perf ROCKLATH pl base—½" 100:2½ gypsum sand plaster	GA-NBS-273 (f)	76	d-1716

description

These assemblies consist of ROCKLATH Plaster Base, wire-tied in place and plastered with gypsum cement plasters to provide lightweight, thin, compact fireproofing for structural steel columns. The fire protection afforded depends on the type and thickness of ROCKLATH, the type and proportioning of aggregate to gypsum plaster, and the plaster thickness. To obtain higher fire resistance ratings, in certain assemblies 20 gauge galvanized 1" hexagonal wire mesh is used over the ROCKLATH. See table above.

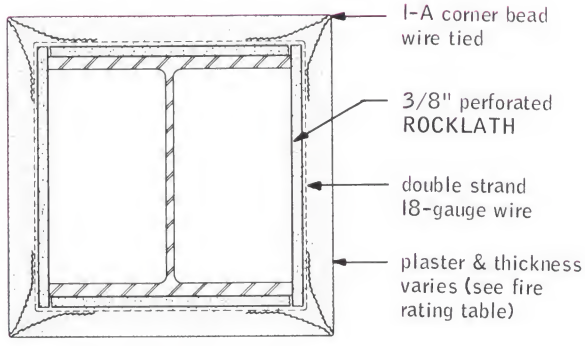
function and utility

Fire protection—The component parts are incombustible. In addition, the gypsum calcines slowly, retarding flame and resisting heat transfer by giving up its chemically combined water of crystallization. The aggregate acts as a bulking agent for the plaster, and some types serve additionally as an insulating material against heat transfer. For example, lightweight aggregates provide more fire resistance than sand.

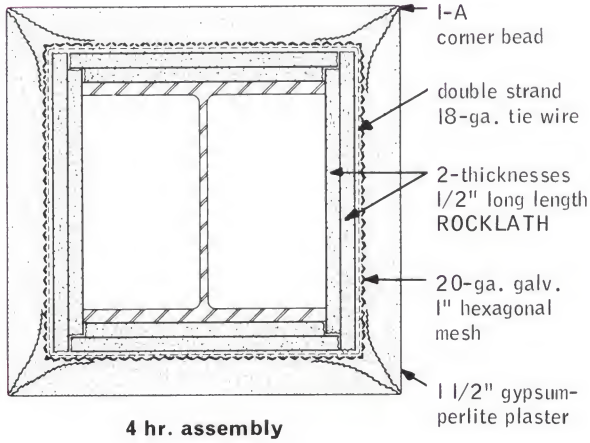
Economy—The thin lightweight plaster assembly reduces the dead load and saves floor area. The plaster surface provides the base for final decoration. Increased fire protection of primary structural framing members usually permits lower insurance premiums.

limitations

To resist impact damage from cartage equipment, etc., metal corner reinforcement must be provided at column corners.



1, 1½, 2 & 3 hr. assembly



4 hr. assembly

A.I.A. File No. 4-F/29-E

*Reg. U.S. Pat. Off.

specifications

notes to architect

1. *In cold weather, all glazing should be complete and the building must be heated to a minimum of 55°F. Before lathing, ventilation should be provided to carry off excess moisture.*

2. *The gypsum plaster thickness, proportioning and type of aggregate for the fire resistance rating desired should be chosen and shown in the plaster specification.*

fire resistance rating	plaster thickness	proportioning	type of aggregate
4 hrs.	1½″	100:2-100:3	perlite
3 hrs.	1⅜″	100:2-100:3	perlite
3 hrs.	2″	100:2-100:3	sand
2 hrs.	1⅜″	100:2-100:3	sand
1 hr.	½″	100:2½	sand

The most expedient way to obtain additional information on fire resistance ratings or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr. Chicago, Ill. 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. ROCKLATH Plaster Base (⅜″ Perforated 16″ x 48″) (½″ Long Length 24″ x ceiling height).

b. USG 1-A Expanded Flange Corner Bead.

c. 18 Gauge Galvanized Tie Wire.

d. 20 Gauge Galvanized 1″ Hexagonal Wire Mesh (not available from U.S.G.).

column fireproofing erection

1, 2, 3-hour construction — Apply ⅜″ x 16″ x 48″ Perforated ROCKLATH vertically against the column flanges and across the web spaces; cut as required; and fasten with double strands of 18 gauge galvanized tie wire, 2″ from ends of the lath and no more than 15″ o.c. at intermediate points. At each corner wire tie USG 1-A Expanded Flange Corner Bead to the double strands of 18 gauge wire and set to (½″—for 1-hour rating) (1″—for 2-hour rating) (1⅜″ or 2″—for 3-hour rating) grounds over ROCKLATH.

4-hour construction—Apply a double thickness of ½″ x 24″ Long Length ROCKLATH vertically against column flanges and bridging the web spaces; cut as required; and fasten with a double strand of 18 gauge galvanized tie wire 4″ from top and bottom and no more than 24″ o.c. at intermediate points. Wrap 20 gauge galvanized 1″ hexagonal wire mesh tightly around the column over the ROCKLATH Plaster Base. At each corner wire tie USG 1-A Expanded Flange Corner Bead to the ROCKLATH and set to 1½″ (for 4-hour rating) grounds over ROCKLATH.

UNITED STATES GYPSUM

column fireproofing

d

PYROBAR* Fireproofing

PARTITION TILE

1726

A.I.A. File No. 10-D/4-F/29-E

fire rating	description	test no.	relative cost index	folder reference
4 hrs.	PYROBAR Gypsum Tile & Plaster Fireprfg—3″ hollow—⅝″ gypsum sand plaster—sanded basecoat & lime putty fin recom wt 17	BMS-92 table 40 (f)	119	d-1726
4 hrs.	PYROBAR Gypsum Tile & Plaster Fireprfg—2″ solid—⅝″ 100:3 gypsum sand plaster wt 17	BMS-92 table 40 (f)	121	d-1726
2 hrs.	PYROBAR Gypsum Tile Fireprfg—3″ hollow—unplastered wt 11	BMS-92 table 40 (f)	62	d-1726
2 hrs.	PYROBAR Gypsum Tile Fireprfg—2″ solid—unplastered wt 11	BMS-92 table 40 (f)	64	d-1726

description

This assembly, consisting of gypsum plaster applied directly to PYROBAR* Gypsum Partition Tile, provides economical lightweight column fireproofing for new construction or alteration work. Precast into a 2″ thick solid or a 3″ thick hollow tile, 12″ x 30″, PYROBAR is easily laid up with gypsum mortar. Indented surfaces and kiln-drying make PYROBAR an ideal plaster base for gypsum basecoat plaster. When plastered one side with sanded plaster, PYROBAR provides fire resistance ratings that meet most requirements (see table above).

function and utility

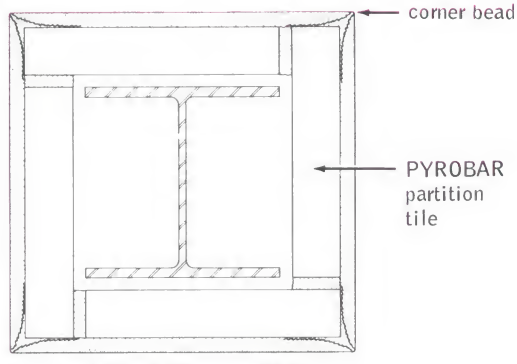
Column fireproofing with PYROBAR Gypsum Partition Tile and gypsum plaster provides lightweight, high-performance fire-protection and finished surfaces for structural framing members, that are naturally combined with PYROBAR partitions. (See USG Systems Folder on PYROBAR Partitions for additional details on the specification and use of PYROBAR.)

Fire Protection—The component parts are incombustible. In addition, the gypsum calcines slowly, retarding flame and resisting heat transfer by giving up its chemically combined water of crystallization. Due to the excellent protection provided by the PYROBAR itself, lightweight aggregate plaster is not required for the fire ratings.

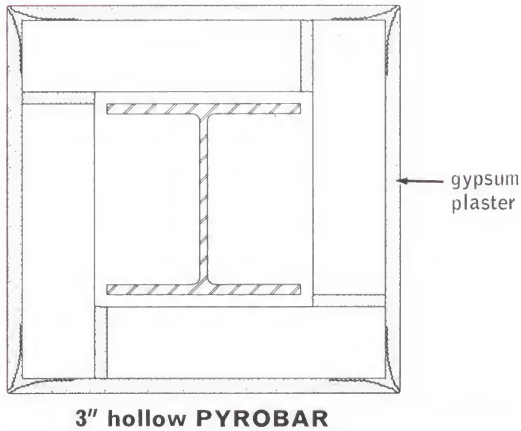
Economy—The thin lightweight plaster assembly reduces the dead load and saves floor area. The plaster surface provides the base for final decoration. Increased fire protection of primary structural framing members usually permits lower insurance premiums.

limitations

To resist impact damage from cartage equipment, etc., metal corner reinforcement must be provided at column corners.



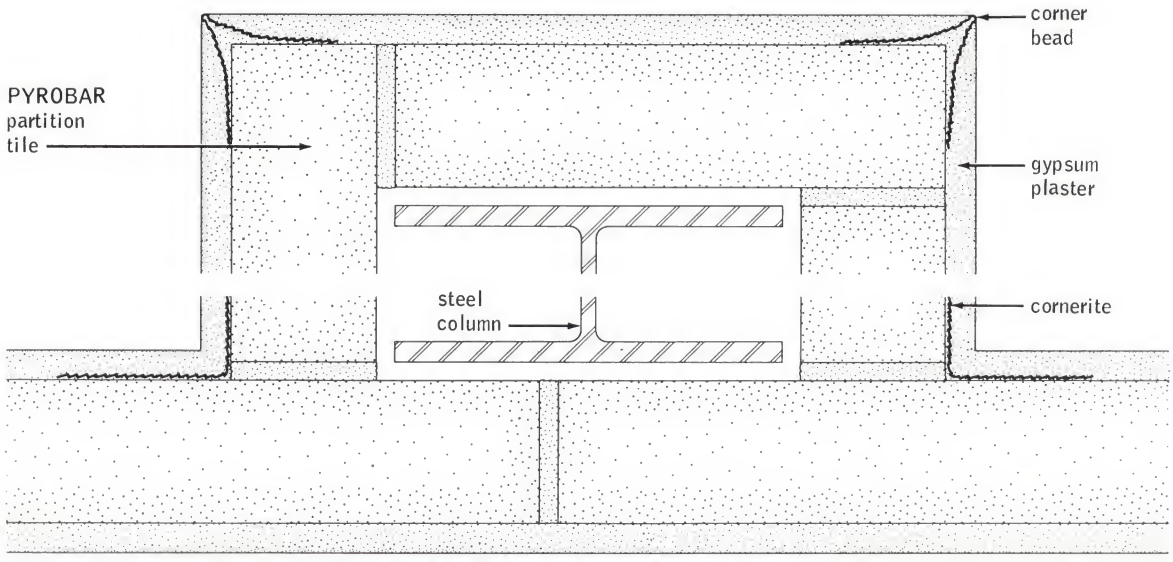
2″ solid PYROBAR



3″ hollow PYROBAR

A.I.A. File No. 10-D/4-F/29-E

*Reg. U.S. Pat. Off.



isolated column and adjacent partition

specifications

notes to architect

Please refer to notes to architect, *USG Systems Folder on PYROBAR Partitions, items 1, 4, 5, 6, 7, 8 and 9 that apply to this construction.*

The most expedient way to obtain additional information on fire resistance ratings or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill. 60606.

masonry erection

All mortar shall be mixed in proportions of 1 part Partition Tile Cement to 3 parts sand, by weight. Mortar shall not be retempered.

PYROBAR Gypsum Tile (2″ solid) (3″ Hollow) shall be laid plumb and true around columns as shown on the plans. After rough plumbing and wiring is in, place the first course with core holes horizontal by bedding mortar to a true and straight line. Set tile to provide ½″ minimum clearance from the edges and faces of all columns. Lay succeeding courses in ½″ thick full mortar beds uniformly level in each course. Stagger vertical joints and interlock tile at corners. Cut all joints flush. Use no broken tile. Chinks and crevices shall be slushed full with mortar. Cut top tile obliquely and wedge in place at ceiling. Joints between tile and ceiling shall be slushed full with mortar. PYROBAR shall not be chased out for conduit or other piping.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. PYROBAR Gypsum Partition Tile (2″ Solid) (3″ Hollow).

b. RED TOP* Partition Tile Cement.

c. Clean, sharp sand, complying with ASTM C35 (not available from U.S.G.).

d. USG Metal Base—2½″ (18) (20) ga.

e. USG Metal Base Splice Plate.

f. USG Masonry Base Clip.

g. USG Striplath.

h. USG Self-Furring Junior Diamond Mesh Metal Lath.

i. USG 1-A Expanded Corner Bead.

lathing accessories

Please refer to USG Systems Folder on PYROBAR Partitions for detailed specification.

*TRADEMARKS: The following trademarks are owned and/or registered in the U.S. Patent Office by United States Gypsum Company, and are used throughout this catalog to designate particular products manufactured by that company: USG (metal products); PYROBAR (gypsum partition tile); RED TOP (partition tile cement).

NOTE: Since methods and conditions of application and use are beyond our control, the United States Gypsum Company will not be responsible for failure of its products when not used according to our directions and specifications.

UNITED STATES GYPSUM

column fireproofing

d

SHEETROCK* Drywall Fireproofing

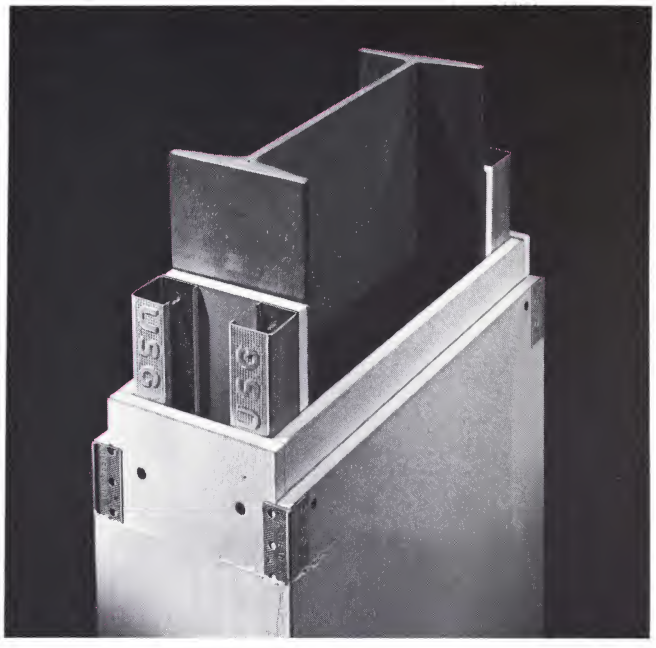
GYPSUM WALLBOARD

1736

fire rating	description	test no.	relative cost index	folder reference
3 hrs.	Gypsum Drywall Fireprfg—3 layers ⅝" SHEETROCK FIRECODE wallbd around col—base & second layers att by DUR-A-BEAD & horiz double tie wires—2nd & 3rd layers lamin & screw att to beads—joints fin	UL Des 14-3 hr (f)	69	d-1736
2 hrs.	Gypsum Drywall Fireprfg—½" SHEETROCK FIRECODE "C" wallbd around col—double layer over ea flange end—double layer on flange faces separ by USG #158 met studs & screw att—met beads on corners—joints fin	UL Des 10-2 hr (f)	37	d-1736

description

These systems for column fireproofing consist of layers of SHEETROCK* FIRECODE* Gypsum Wallboard held in place by a combination of wire, steel studs, screws, and metal angles. The assemblies provide lightweight, thin, compact steel column fire protection of two or three hours depending on the construction. To obtain the three-hour fire rating the layers of wallboard are laminated together with PERF-A-TAPE* Joint Compound (embedding type). Lower cost BAXBORD* FIRECODE Gypsum Backing Board may be used as base layers in the construction. DUR-A-BEAD* Corner Reinforcement concealed with PERF-A-TAPE Compound resists damage from impact at exterior corners.



UL Des. 10—2 hrs.

function and utility

Fire Resistance—Constructed of incombustible components, these assemblies afford fire resistance ratings of two and 3 hours. Increased fire protection of primary structural framing members usually permits lower insurance premiums.

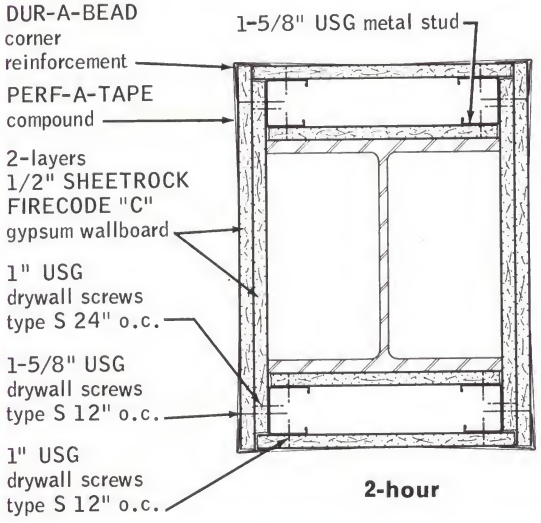
Lightweight—These thin drywall fire protection assemblies weigh only 6 to 8 lbs. per sq. ft., reduce dead load and save floor area.

Economy—Easily and quickly installed in one continuous operation without waiting for adhesives to dry. This speed of erection plus a minimum number of components and low material costs provide realistic and competitive construction costs.

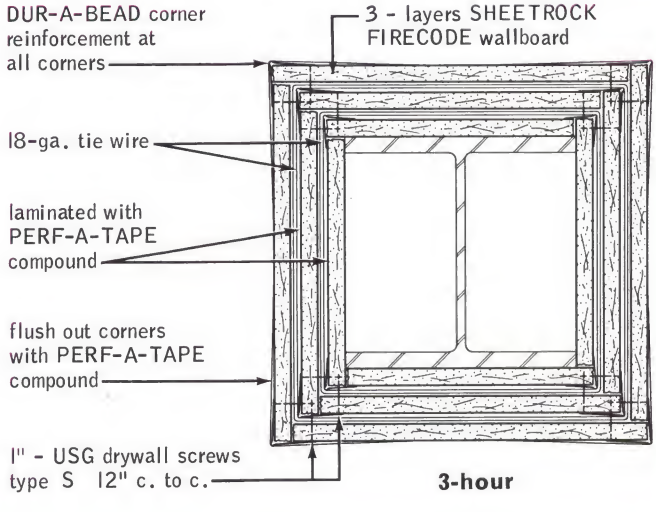
limitations

The constructions should not be used where normally exposed to excessive moisture or humidity.

plan sections



2-hour



3-hour

A.I.A. File No. 4-F/29-E

A.I.A. File No. 4-F/29-E

*Reg. U.S. Pat. Off.

specifications

notes to architect

Non-load bearing drywall column fireproofing will not resist stresses imposed by structural movement, and is subject to dimensional variations due to changes in temperature and humidity. It is recommended that wallboard surfaces be isolated from all structural elements by control joints or other means where the column fireproofing abuts any structural element or dissimilar wall or ceiling assembly.

The most expedient way to obtain additional information on fire resistance ratings or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

general conditions

In cold weather and during the period of wallboard lamination and joint finishing, temperatures within the building shall be maintained uniformly within the range of 55° to 75° F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

materials

See USG product folders in this series:

Joint Treatment Folder for PERF-A-TAPE Joint System Specifications.

Gypsum Wallboard Folder for information on Wallboard System Components.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company.

a. Faceboard—(⅝″ thick SHEETROCK FIRECODE) (½″ thick SHEETROCK FIRECODE "C") Wallboard, tapered edges, 48″ wide, in standard lengths as required.

b. Backing Board—⅝″ thick, 24″ wide BAXBORD FIRECODE 8′ lengths.

c. Laminating Adhesive—PERF-A-TAPE Joint Compound (embedding type).

d. Joint Treatment—PERF-A-TAPE Joint System.

e. Fasteners—USG Drywall Screws—1″ Type S, 1⅝″ Type S.

f. USG Corner Bead—103 DUR-A-BEAD or ECONO Metal Corner Reinforcement.

g. 18 ga. Tie Wire.

h. USG Metal Studs—No. 158 (1⅝″).

column fireproofing erection

2-hour fire-resistance rating—Inner layer of ½″ SHEETROCK FIRECODE "C" Wallboard shall be attached to USG No. 158 Metal Studs with 1″ USG Drywall Screws Type S spaced 24″ o.c. Assembly shall be placed with wallboard adjacent to column flange and another wallboard layer erected vertically around column. Base layer panels shall be attached to studs with 1″ Type S drywall screws 24″ o.c.; face layer panels 12″ o.c. Second wallboard layer shall be applied to web face side of column and attached through base layer to web of studs with 1⅝″ Type S screws 12″ o.c. and staggered from screws in first layer. ECONO Corner Bead shall be applied vertically at all corner, fastened with 1″ Type S screws 12″ o.c. and finished with PERF-A-TAPE Compound.

3-hour fire-resistance rating—Steel column fire protection shall be provided with three layers of ⅝″ SHEETROCK FIRECODE Wallboard applied vertically with center layer and face layer laminated to preceding layer with PERF-A-TAPE Joint Compound (embedding type). DUR-A-BEAD shall be positioned at each corner of *each* layer and fastened on the center and face layers with 1″ USG Drywall Screws, Type S spaced 12″ o.c. Fasten innermost and center layers with a double strand of 18 ga. tie wire spaced no more than 1′-9″ o.c. and a maximum of 6″ from slab constructions. Corners of face layer shall be finished with PERF-A-TAPE Joint System.

UNITED STATES GYPSUM

fireproofing

d

RED TOP* FIRECODE* Plaster

1746

fire rating	description	test no.	relative cost index	folder reference
column applications				
4 hrs.	RED TOP FIRECODE Plaster Col Fireprfg—spray appl direct—2½" uniform thickn around 10" 49# col	UL Des 25-4 hr (f)	37	d-1746
3 hrs.	RED TOP FIRECODE Plaster Col Fireprfg—spray appl direct—2⅛" uniform thickn around 10" 49# col	UL Des 13-3 hr (f)	31	d-1746
beam applications				
5 hrs.	RED TOP FIRECODE Plaster Beam Fireprfg—spray appl direct—1¼" uniform thickn around 8 wf beam—2½" conc on blend system stl flr	UL Des 37-5 hr (f)	42	d-1746
4 hrs.	RED TOP FIRECODE Plaster Caged Beam Fireprfg—9 ga galv wire wrapped around 8 wf beam 12" & 18" o.c. bent over bottom flange—3.4# dm met lath—fireprfg spray appl 1" thickn to lath—2½" conc on corrug & cellular stl flr	UL Des 23-3 hr (f)	56	d-1746
3 hrs.	RED TOP FIRECODE Plaster Beam Fireprfg—spray appl direct—¾" uniform thickn around 8 wf beam—2½"conc on fluted & cellular stl flr	UL Des 229-2 hr (f)	25	d-1746
deck and floor applications				
3 hrs.	RED TOP FIRECODE Plaster Deck & Flr Fireprfg—spray appl direct—2½" conc on 3" fluted & flat cellular stl flr—¾" below cells—⅞" in reentrant space—¾" on flat cellular section—addit thickn of ⅝" below cells & flat cellular secs & 2 1/16" in reentrant space under trench header ducts (Can be used as (1) blend system as tested (2) full cellular, or (3) non-cellular assembly)	UL Des 70-3 hr (f)	flat cell 16 fluted 27	d-1746
3 hrs.	RED TOP FIRECODE Plaster Deck & Flr Fireprfg—spray appl direct—2½" conc on cellular stl flr—⅝" below cells—¾" betw cells—1" below header ducts	UL Des 22-3 hr (f)	full cell 21	d-1746
3 hrs.	RED TOP FIRECODE Plaster Deck & Flr Fireprfg—spray appl direct—2½" conc on corrug & cellular stl flr—¾" on flutes—1 9/16" below header ducts	UL Des 23 & 24-3 hr (f)	20	d-1746
3 hrs.	RED TOP FIRECODE Plaster Deck & Flr Fireprfg—spray appl direct—2½" conc on ribbed & cellular stl flr—¾" on ribs—1" below header ducts	UL Des 32-3 hr (f)	20	d-1746
2 hrs.	RED TOP FIRECODE Plaster Deck & Flr Fireprfg—spray appl direct—2½" conc on 3" fluted & cellular stl flr—¾" uniform thickn	UL Des 68-2 hr (f)	flat cell 16 fluted 24	d-1746
2 hrs.	RED TOP FIRECODE Plaster Deck & Flr Fireprfg—spray appl direct—2½" conc on cellular stl flr—½" uniform thickn	UL Des 10-2 hr (f)	15	d-1746
2 hrs.	RED TOP FIRECODE Plaster Deck & Flr Fireprfg—spray appl direct—2½" conc on 1½" fluted & cellular stl flr—⅜" below cells—½" in reentrant space—⅜" on flat cellular section—addit thickn of ⅜" under trench header ducts	UL Des 229-2 hr (f)	flat cell 8 fluted 14	d-1746

description

RED TOP FIRECODE* "V" Plaster is a cementitious gypsum product for direct spray application to steel floor units, steel beams and steel columns to provide the necessary fire protection. It is lightweight, nonshrinking, and sets and dries with a crusty surface. Requiring only the addition of water, the mixing and application is foolproof; no bonding agents, no wetting of the steel, no tamping to obtain the proper density and no overspray to control dusting are necessary. All published test data, fire ratings and physical properties are based on one basic product formulation.

Although not generally considered a finished surface, a pleasing spray texture can be accomplished. AUDICOTE* Acoustical Plaster may be applied over RED TOP FIRECODE "V" Plaster as a finish coat, or the FIRECODE "V" may be spray painted using TEXOLITE* Standard paint.

function and utility

A practical, lightweight, direct application, economical fireproofing plaster which can be applied by a non-franchised applicator using conventional plastering machines.

RED TOP FIRECODE "V" Plaster can be job sprayed without the irritating annoyance of a widespread overspraying and dusting which litters the facades of adjoining buildings.

RED TOP FIRECODE "V" Plaster meets and exceeds the minimum requirements of the revised General Services Administration Guide Specification for Sprayed Fire Protection. Tests conducted and reported by three nationally recognized laboratories: Robert W. Hunt Company, Boyle Engineering Laboratory, and Underwriters' Laboratories, Inc.

limitations

RED TOP FIRECODE "V" Plaster:

1. Should be applied under conditions acceptable to plastering—protected from freezing.
2. Cannot be considered a basecoat plaster; a lime putty finish coat should not be specified since the two products are not compatible.
3. Is not recommended for use as a surface which will be subjected to continuous abrasion.
4. Is not recommended for use where it will be subjected to continuous moisture conditions.
5. Is not recommended for use where a heavy, intensive, continuous vibration is expected (normal vibration expected in a building for occupancy is not considered critical).

technical data

Fire Hazard Classification—RED TOP FIRECODE "V" Plaster is listed under Underwriters' Laboratories, Inc. Hazard Classi-

(continued on page 4)

A.I.A. File No. 21-C-1/29-E

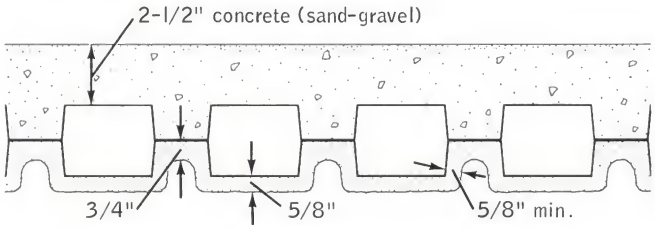
*Reg. U.S. Pat. Off.

details

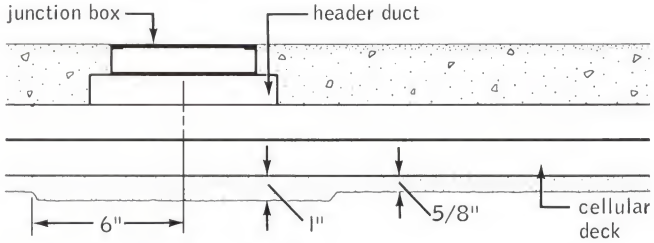
scale: 3″=1′-0″

cellular steel floors

UL design no. 22—3 hrs.
guide no. 40 U18.3 Class C-3 designs

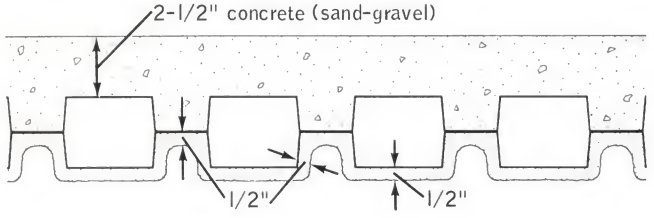


3-hour cellular floor



3-hour electrified cellular floor

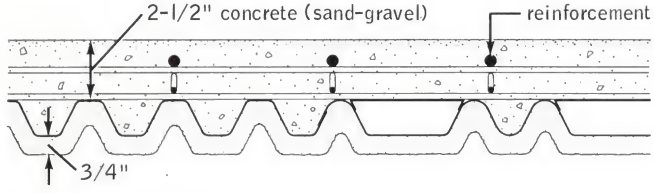
UL design no. 10—2 hrs.
guide no. 40 U18.3 Class D-2 designs



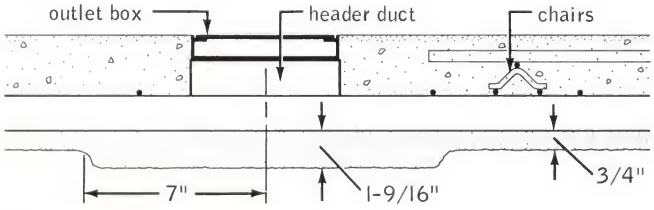
2-hour cellular floor

corrugated steel floors

UL design nos., 23—3 hrs., 24—3 hrs.
guide no. 40 U18.3 Class C-3 designs



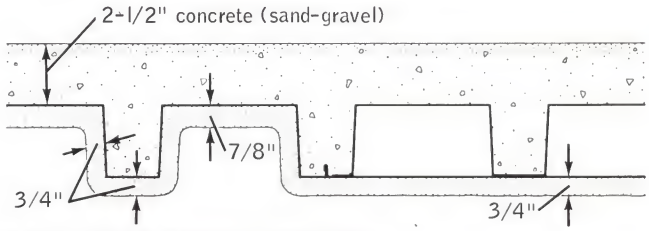
3-hour corrugated floor



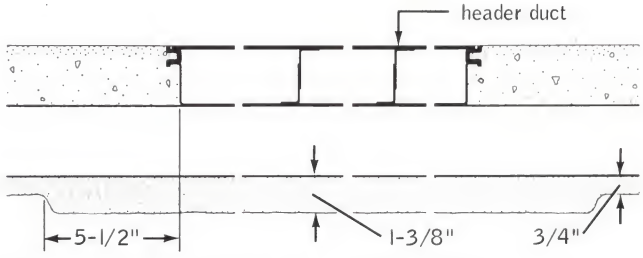
3-hour electrified corrugated floor

"blend system" steel floors

UL design no. 70—3 hr. (beam 5 hrs.)
guide no. 40 U18.3 Class C-3 designs

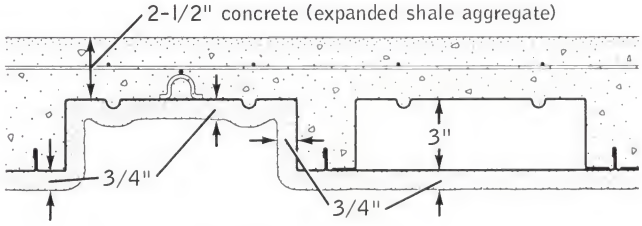


3-hour "blend system" ribbed floor



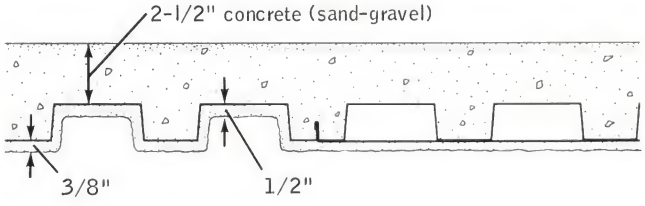
3-hour electrified "blend system" ribbed floor

UL design no. 68—2 hrs.
guide no. 40 U18.3 Class D-2 designs

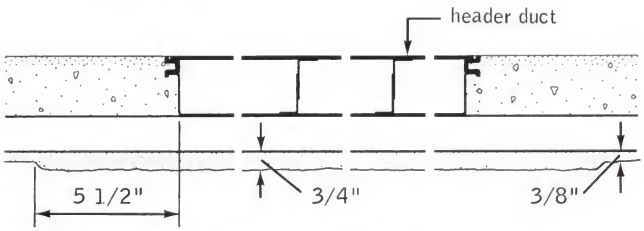


2-hour "blend system" ribbed floor

UL design no. 229—2 hrs.
guide no. 40 U18.3 Class D—2 designs



2-hour "blend system" floor

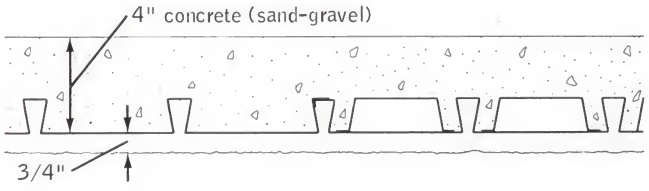


2-hour electrified "blend system" floor

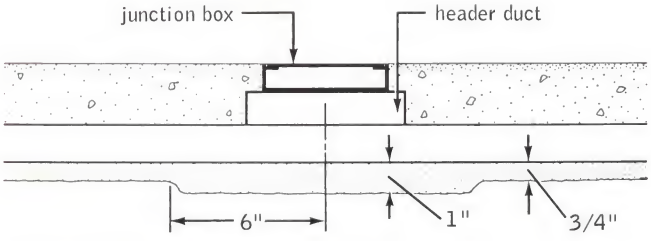
details

"blend system" ribbed steel floors

UL design no. 32—3 hrs.
guide no. 40 U18.3 Class C-3 designs

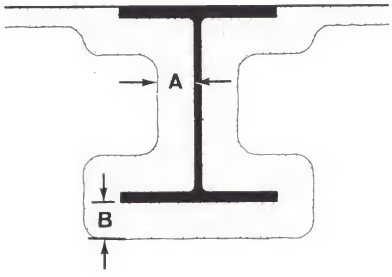


3-hour "blend system" ribbed floor



3-hour electrified "blend system" ribbed floor

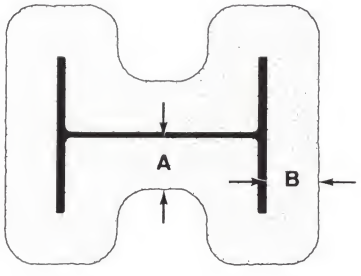
steel beams



fire rating	UL design no.	dimension A	dimension B	class	designs
5 hrs.	37-5 hrs.	1¼"	1¼"	B	4
3 hrs.	229-3 hrs.	¾"	¾"	D	2

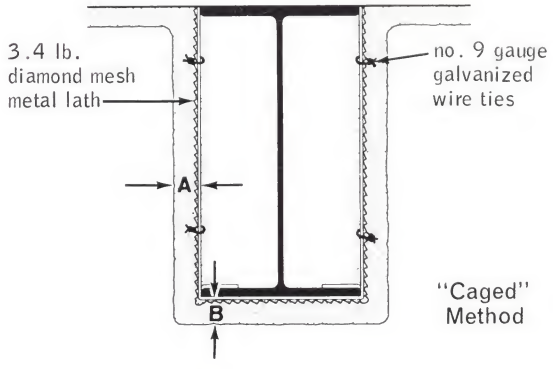
Note: All material shown above per UL guide no. 40 U18.3

steel columns



fire rating	UL design no.	dimension A	dimension B	class	designs
4 hrs.	15-4 hrs.	2½"	2½"	B	4
3 hrs.	13-3 hrs.	2⅛"	2⅛"	C	3

Note: All material shown above per UL guide no. 40 U18.3



fire rating	UL design no.	dimension A	dimension B	class	designs
4 hrs.	23-3 hrs.	1"	1"	C	3

Note: All material shown above per UL guide no. 40 U18.3

*Reg. U.S. Pat. Off.

technical data (*continued from page 1*)

fication Guide No. 40 U8.4½ with a Flame Spread of 15; Fuel Contributed of 10; Smoke Developed of 0—which meets the requirement of N.F.P.A. Pamphlet No. 220.

Label Service—Underwriters' Laboratories, Inc. labels on each bag verify that RED TOP FIRECODE "V" Plaster may be used with the constructions outlined and designated as Design Numbers and listed in the Underwriters' Laboratories, Inc. "Building Materials List" where the detail description notes "Cementitious Mixture Guide No. 40 U18.3."

Sound Absorption (CPS)

125	250	500	1000	2000	4000	NRC
.23	.28	.37	.53	.58	.48	.45

Test Reference No. A-64-210

Physical Properties

Density—Dry density 22 to 25 lbs./cu. ft.

Dry Compressive Strength—60 psi.

Insulation Value—"K" factor 0.72.

Surface Hardness—444 lbs./sq. in. based on a ¼-in. penetration of a plunger having an area of 1/20 sq. in. into a material having a dry density of 23.9 lbs./cu. ft.

Deflection—RED TOP FIRECODE "V" Plaster did not crack or delaminate when the backing to which it was applied was deflected downward 1/120 of the span (Hunt Lab).

Corrosion Resistance—There was no corrosion or bond failure when ¾ in. of RED TOP FIRECODE "V" Plaster was applied to shop coat steel or galvanized steel and tested in accordance with ASTM B-117-57T for 240 hours (Hunt Lab).

Bond Impact—There was no delamination or cracking of RED TOP FIRECODE "V" Plaster when tested in accordance with ASTM E-72. A 60-lb. sandbag was dropped 4′-0″ on a completed floor assembly 2′-0″ x 8′-0″ end supported (Hunt Lab).

Bond Strength—RED TOP FIRECODE "V" Plaster far exceeded minimum requirements when tested in accordance with ATSM 297. Bond failure did not occur at the metal, but in tensile strength of the material. Failure occurred at 604 psf (Hunt Lab).

Dusting—RED TOP FIRECODE "V" Plaster panel was subjected to air erosion for 76 hours at air velocity of 2150 ft./min. Boyle Engineering Lab report confirms *no dusting*.

specifications

notes to architect

1. *See USG Gypsum Plasters Product Folder for General Plaster Specifications.*
2. *See USG Paint Products Folder for Paint Specifications.*

scope

Furnish and install materials necessary to complete the work of this section as specified and shown on the drawing.

general provisions

In cold weather, the temperature of the building shall be maintained in the uniform range above 55°F for an adequate period prior to the application of FIRECODE "V" Plaster, while the spray fireproofing is being done and until the material is dry.

surface preparation

Surface to receive fireproofing shall be clean, dry and free of grease and/or oil.

material

Thickness of application and required fire ratings are based on the use of RED TOP FIRECODE "V" Plaster as manufactured by the United States Gypsum Company and listed in Underwriters Laboratories, Inc. "Building Material List" Guide #40U18.3, 1965 edition and supplements.

delivery and storage

1. Delivery: All fireproofing materials shall be delivered in original, unopened packages bearing the name of United States Gypsum and the Underwriters Label.

2. Storage: Material shall be stored off the ground, under cover, and away from damp surfaces. All material shall be kept dry until ready for use.

application

1. Sprayed fireproofing shall not be applied until all hangers and attachment are installed and the work to be covered has been approved.

2. RED TOP FIRECODE "V" Plaster shall be machine mixed, adding 40 to 50 quarts of water for each 50 pounds of plaster. Water contents may be varied to meet job conditions, type of equipment and thickness requirements.

3. RED TOP FIRECODE "V" Plaster shall be applied by spraying with a conventional plastering machine. In application to steel floor units, the plaster shall be applied in the required uniform thickness on the underside contour of the floor. On steel beams, columns and metal lath surfaces, a first coat of ½″ to ¾″ thickness shall be applied, allowed to set and partially dry. Where required, a second coat shall then be applied to bring the plaster to the required thickness. Fireproofing shall be applied in thicknesses to provide the following fire protection:

Columns	(O) Hr. Rating
Beams	(O) Hr. Rating
Cellular Steel Floor	(O) Hr. Rating

completion

At the completion of the fireproofing, all fireproofing plaster droppings and rubbish shall be removed from the building, leaving floors broom clean. Excess materials, scaffolding, machines, tools and other equipment shall be removed from the building and job site.

UNITED STATES GYPSUM

wall furring

e

USG* Drywall Wall Furring System

1776

A.I.A. File No. 20-B-2.1/23-J/23-L

description	relative cost index	comments	folder reference
USG Metal Furring Channels, 24″ o.c., ½″ Insulating SHEETROCK screw attached, PERF-A-TAPE Joint Treatment	100	Direct attachment by means of furring strips does not isolate the surface membrane from structural stresses. No limiting height	e-1776

description

This exterior wall furring assembly consists of SHEETROCK* Gypsum Wallboard screw attached to USG Drywall Furring Channels. This specially designed channel, roll-formed from 25 ga. electro-galvanized steel, is 2¾″ wide x ⅞″ deep and has ½″ wing flanges for firm attachment directly to virtually any type of masonry. A specially designed self-tapping steel screw with a rust-inhibitive coating is used to attach the wallboard to the studs. To provide additional space for pipes, conduits or ducts, the metal channel may be furred out up to 3″ with horizontal ¾″ cold rolled channels wire-tied to USG* Adjustable Wall Furring Brackets. The assembly when completed with the PERF-A-TAPE* Joint System and DUR-A-BEAD* Corner Reinforcement may be used in new construction or in remodeling.

SHEETROCK for this assembly is available in three thicknesses and two types (see Specifications, page 3). With Insulating (foil back) SHEETROCK Wallboard the system is effective as a vapor barrier and provides significant insulating value.

thermal resistance (R) value
Insulating SHEETROCK wallboard (1)

⅜″ thickness	2.04
½″ thickness	2.15
⅝″ thickness	2.26

(1) Wall application, including air space of ¾″ or more.

function and utility

Versatility—The USG Drywall Wall Furring System is adaptable for use in all types of new construction and modernization. Single or double-layer construction may be installed over virtually any type of masonry—brick, tile, PYROBAR* Gypsum Tile, monolithic concrete.

Vapor Barrier—An efficient vapor barrier is obtained with Insulating (foil back) SHEETROCK Wallboard. Meets ASTM requirements for vapor permeability not exceeding 0.30 perm.

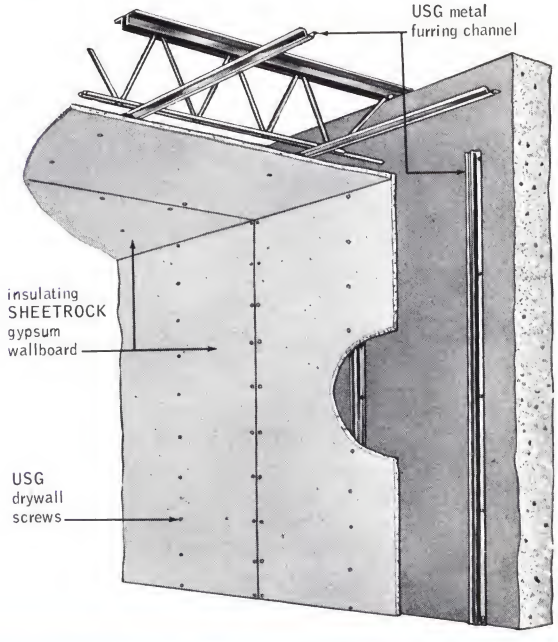
Insulation—The thermal insulating value of an air space faced with Insulating SHEETROCK properly applied, is equivalent to that of ½″ wood fiber insulating board.

Economy—Utilizes low-cost materials. A minimum number of components and simplified installation procedures result in fast erection.

limitations

1. With the Adjustable Wall Furring Bracket, the limiting height is 12′.

2. Not recommended for use where furring would normally be exposed to excessive moisture or continued wetting.



OTHER U.S.G. WALL FURRING SYSTEMS

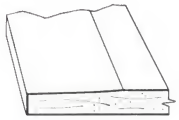
are listed and compared in Construction Selector, Section E. Full information on these additional systems may be found in the folders noted below:

system	folder reference
Gypsum Lath & Plaster—Resilient Clips	a-1156
Gypsum Lath & Plaster—Steel Channels	a-1036
Gypsum Lath & Plaster—Wood Furring	a-1366
Gypsum Lath & Plaster—TRUSSTEEL Studs	a-1186
Gypsum Lath & Plaster—USG Metal Studs	a-1196
Gypsum Lath & Thin-Coat Plaster—Steel Channels	a-1146
Metal Lath & Plaster—Steel Channels	a-1026
Metal Lath & Plaster—TRUSSTEEL Studs	a-1176
Gypsum Wallboard—Resilient Steel Channels	a-1406
Gypsum Wallboard—Wood Furring	a-1386
Gypsum Wallboard—USG Metal Studs	a-1206

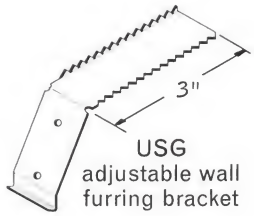
A.I.A. File No. 20-B-2.1/23-J/23-L

*Reg. U.S. Pat. Off.

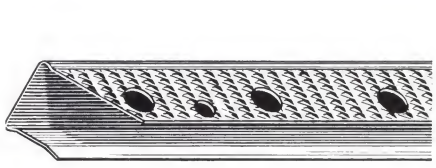
components



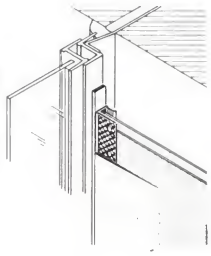
tapered edge
SHEETROCK gypsum wallboard



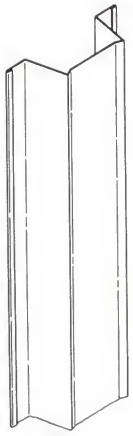
USG
adjustable wall
furring bracket



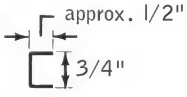
no. 200-A USG metal trim



see "gypsum wallboard & joint treatment" product catalogs for full description on accessories

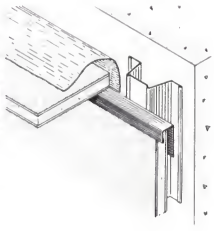


USG metal
furring channel



USG cold
rolled channel

USG metal trim

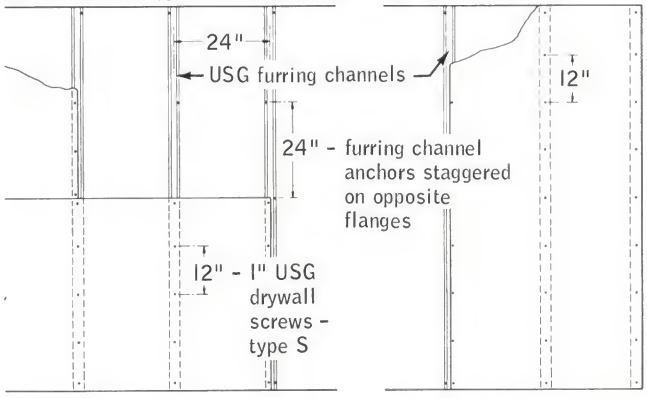


1" USG drywall screw—type S—bugle head

1⅝" USG drywall screw—type S—trim head

wall elevation—scale: ¼" = 1'-0"

SHEETROCK gypsum wallboard —reg. or insulating



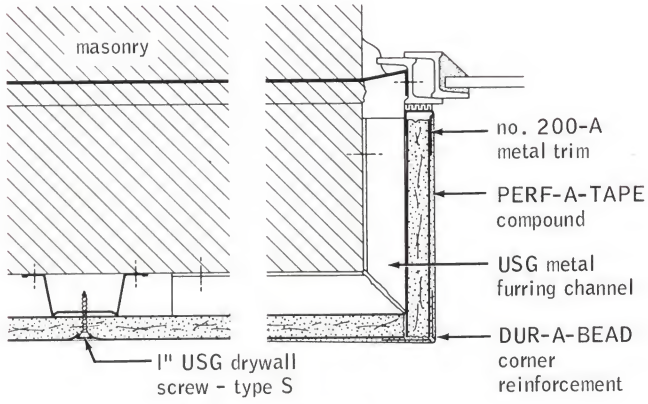
horizontal application

vertical application

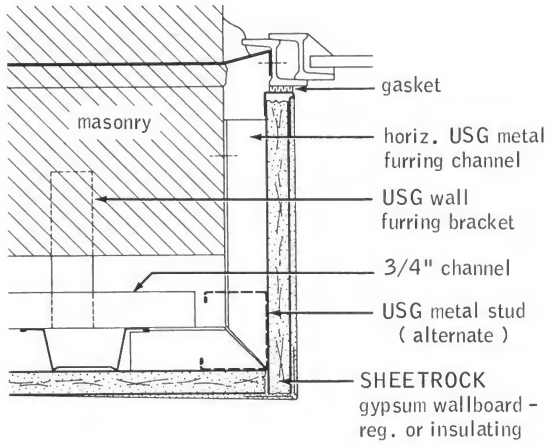
details

scale: 3″ = 1′-0″

furred wall plan sections

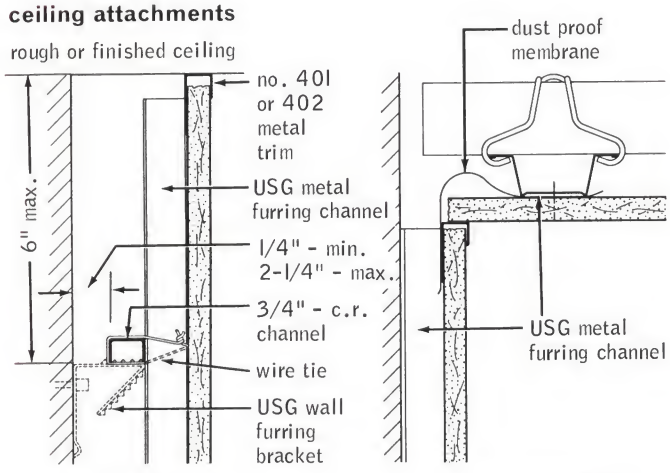


metal window—jamb



metal window—jamb

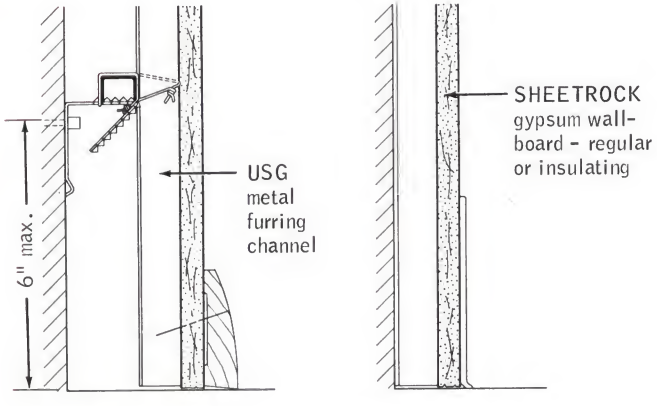
ceiling attachments



adjustable wall furring

suspended ceiling

floor attachments & bases



adjustable wall furring

attached furring top set

specifications

notes to architect

1. *Drywall wall furring (non-load bearing) will not resist stresses imposed by structural movement, and is subject to dimensional variations due to changes in temperature and humidity. It is recommended that wallboard surfaces be isolated from all structural elements by control joints or other means where:*

a. *The wall furring abuts any structural element or dissimilar wall or ceiling assembly.*

b. *The wall furring construction changes within the plane of the furring.*

Install control joints in the furring over all expansion or control joints in the base exterior or interior wall.

In long wall furring runs, control joints should be provided no more than 30′ o.c. Door frames extending from floor to ceiling or window frames are recommended as control joints. For doors less than ceiling height or windows, control joints extending from both corners of the frame to the ceiling and floor may be used.

2. *Holes cut in a thin wallboard membrane such as door frames, windows, etc., cause a concentration of stresses in the wallboard. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

3. Ceramic Tile—*The use of SHEETROCK W/R Gypsum Wallboard is recommended to provide a base for the adhesive application of ceramic, metal and plastic tile.*

4. *Where the furring channel is installed to exterior walls and there is a possibility of water penetration through the walls, an asphalt felt protection strip should be installed between the furring channel and the wall surface.*

The most expedient way to obtain additional information on details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

*Reg. U.S. Pat. Off.

general conditions

In cold weather and during the period of wallboard application and joint finishing, temperatures within the building shall be maintained uniformly with the range of 55° to 70°F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of United States Gypsum Company.

materials

See USG product folders in this series:

Joint Treatment Folder for Joint System Specifications.

Gypsum Wallboard Folder for information on Wallboard System Components.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company.

a. USG Metal Furring Channel.

b. Faceboards—(⅜″) (½″) (⅝″) thick, 48″ wide Tapered Edge SHEETROCK, (Regular) (Insulating—Foil Back) Gypsum Wallboard, lengths as required.

c. Joint Treatment—PERF-A-TAPE or DURABOND* Joint System.

d. Fasteners—(specify type from page 2).

e. USG Metal Trim (specify type from page 2).

f. USG Corner Bead—DUR-A-BEAD, PERF-A-BEAD* (specify type from page 2).

g. USG Adjustable Wall Furring Bracket.

h. ¾″ Cold Rolled Channels.

i. Galvanized Tie Wire (16) (18) ga.

furring channel erection—direct attachment

USG Furring Channels spaced 24″ o.c. maximum, shall be attached to masonry or concrete surfaces (vertically) (horizontally) with power driven anchors or concrete stub nails spaced 24″ o.c. through alternate wing flanges (staggered) of the furring channel. End splices shall be provided by nesting channels no less than 8″ and securely anchoring to masonry with two fasteners in each wing.

furring channel erection—wall furring bracket

USG Adjustable Wall Furring Brackets, with serrated edges up, shall be attached to the masonry walls not over 4″ from columns or other abutting construction and not over 36″ o.c. horizontally; not over 6″ from floor and ceiling, not over 48″ vertically and as required above and below windows. Use (one 2″ cut nail in mortar joints of brick or clay tile or cement block, or in the field or lightweight aggregate blocks) (⅝″ concrete stub nails or power-driven nails or other suitable fasteners in monolithic concrete) fastening through the top hole of the bracket. ¾″ cold rolled channels shall be laid horizontally on the furring brackets with the legs down, plumbed vertically from ceiling to floor and wire tied to the bracket with a double strand of 16 ga. or triple strand of 18 ga. tie wire. Bend down excess bracket length.

The USG Furring Channel shall be erected vertically and wire tied with a double strand of 16 ga. or triple strand of 18 ga. galvanized tie wire at the junction of each ¾″ channel. The USG Furring Channels shall be spaced (16″ o.c. for ⅜″ wallboard) (24″ o.c. for ½″ or ⅝″ wallboard) maximum.

panel erection

Wallboard shall be applied with the long dimension (at right angles) (parallel) to the furring channel and fastened with 1″ USG Drywall Screws Type S spaced 12″ o.c. All abutting end joints when board is applied at right angles to channels and all abutting edge joints when board is applied parallel to channels shall occur over the web surface of the furring channel. Joints shall be fitted neatly and accurately with end joints staggered.

wallboard accessories

a. PERF-A-TAPE or DURABOND Joint System shall be used on all face board joints and internal angles formed by the intersection of walls and ceilings.

b. Metal Corner Bead No. (000000) shall be securely installed at all external corners, and shall be in single lengths where the length of the corner does not exceed standard stock lengths. At least two coats of joint compound shall be applied over beads and each coat feathered out onto panel faces.

c. Metal Trim No. (000000) shall be securely installed where indicated. Finish with PERF-A-TAPE Joint Compound, as required.

d. Fasteners shall be as shown on drawings or as herein specified. Fasteners shall be driven not less than ⅜″ from ends or edges of wallboard to provide uniform dimple not over 1/32″ deep. Spot exposed fastener dimples on face layers with at least three coats of joint compound, feathered and sanded smooth.

e. Control Joints shall be provided in the wallboard as indicated and in the face layer shall consist of two pieces of Metal Trim back-to-back. Supporting members are to be broken behind the control joints located over expansion or control joints in the base exterior or interior wall.

UNITED STATES GYPSUM

wall furring

e

USG® Drywall and Rigid Foam Insulation

1786

description	relative cost index	comments	folder reference
1½" STYROFOAM FR bonded to masonry wall, ½" SHEETROCK bonded to STYROFOAM FR, PERF-A-TAPE Joint Treatment	167	Excellent insulation and vapor barrier characteristics. No pipe chase capacity	e-1786

A.I.A. File No. 20-B-2.1/23-L

description

This exterior wall furring assembly consists of ⅜", ½" or ⅝" thick SHEETROCK* Gypsum Wallboard, adhesively bonded to Styrofoam FR insulation. The insulation, available in thicknesses from 1½" to 3", is readily attached to unit masonry and poured or precast concrete with portland cement mortar or plain or modified Styrotac bonding adhesive. Wallboard is finished with the PERF-A-TAPE* Joint System and DUR-A-BEAD* Corner Reinforcement.

In new construction or in remodeling, the system provides a highly insulative, self-furred solid backup for SHEETROCK Wallboard. Thermal insulation values (U factors) for the system range from 0.12 to 0.13 for 1½" thickness; from 0.09 to 0.11 for 2" thickness and from 0.07 to 0.08 for 3" thickness of Styrofoam FR insulation and ⅜" SHEETROCK applied to commonly used unit masonry or concrete walls. This system provides a fully insulated wall at a cost competitive with many non-insulated furred walls.

Styrofoam FR Insulation and Styrotac Bonding Adhesive are products of the Dow Chemical Company, which refers to this as the "Miller System."

function and utility

Insulation—This thin, lightweight assembly has constant, excellent thermal insulation values even under variable moisture conditions.

Vapor Barrier—The Styrofoam is unaffected by water or water vapor and so provides an ideal vapor barrier for the assembly.

Flame Retardant—The Styrofoam FR meets ASTM requirements for self-extinguishing plastics.

Economy—Low-cost materials and a minimum number of components that offer simple speedy erection combine to provide low in-place costs. This thin lightweight system offers possible structural savings. The high insulation values offer possible economies in initial and operating expenses for heating and cooling.

limitations

1. Gypsum wallboard is not recommended for use where it would be exposed to excessive moisture or continued wetting.

2. Limited to vertical application of wallboard only.

3. Requires additional wood nailers to facilitate mechanical attachment of base, mouldings, casings, closure strips, etc. (see specifications for details).

specifications—notes to architect

1. *Drywall wall furring (non-load bearing) will not resist stresses imposed by structural movement, and is subject to dimensional variations due to changes in temperature and humidity. It is recommended that wallboard surfaces be isolated from all structural elements by control joints or other means where:*

a. *The wall furring abuts any structural element or ceiling assembly.*

b. *The wall furring construction changes within the plane of the furring.*

Install control joints in the furring system where expansion or control joints occur in the base exterior or interior wall.

In long wall furring runs, control joints should be spaced no more than 30' o.c. Door frames or window frames extending from floor to ceiling may be considered control joints. For frames less than ceiling height or other openings, vertical control joints extending from either the center or both corners of the frame to the ceiling and floor may be used.

2. *Holes cut in a thin wallboard membrane such as door frames, windows, etc., cause a concentration of stresses in the wallboard. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy or design, a control joint is not otherwise specified.*

3. *Wood nailers should be securely attached to the wall at the base, wall ceiling juncture and around windows and other openings to facilitate mechanical attachment of wallboard, base, moldings, casings, closure strips, etc.*

4. *Shallow electrical outlet boxes are recommended when Styrofoam FR less than 1½" thick is used.*

5. *Generally, SHEETROCK can be bonded on Styrofoam FR 24 hours after foam installation. However, when outdoor temperatures are below 50° F. during and after application of Styrofoam FR, allow 48 to 72 hours for adhesive to develop bond strength before application of the SHEETROCK gypsum wallboard. Once Styrofoam FR is applied to the wall, the wall and the adhesive are isolated from any source of heat from within the building. Therefore, a longer time is required for the adhesive to develop adequate bond strength.*

The most expedient way to obtain additional information on details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 So. Wacker Dr., Chicago, Ill. 60606.

A.I.A. File No. 20-B-2.1/23-L

*Reg. U.S. Pat. Off.

general conditions

Styrofoam FR shall not be applied to masonry walls when outdoor temperatures during the installation period may fall below 32° F. A minimum temperature of 55° F. shall be provided and maintained in the building at least 72 hours prior to, during and after, application of Styrofoam FR. Ventilation shall be provided to eliminate excessive moisture.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of materials shall be in accordance with the latest printed directions or specifications of the manufacturer.

materials

See USG product folders in this series:

Joint Treatment Folder for PERF-A-TAPE Joint System specifications.

Gypsum Wallboard Folder for information on Wallboard System Components.

Paint Products Folder for Paint Specifications.

See Dow Chemical Company Technical Data Sheets for information on Styrofoam FR and adhesives.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

a. Styrofoam FR Insulation (1″) (1½″) (2″) (3″) thick, as manufactured by the Dow Chemical Company.

b. Adhesive—Styrotac Bonding Adhesive and/or Additive, Styrocrete Latex Mortar Additive, as manufactured by the Dow Chemical Company.

c. Faceboards—(⅜″) (½″) (⅝″) thick, 48″ wide Tapered Edge SHEETROCK Gypsum Wallboard, in standard lengths as required.

d. Joint Treatment—PERF-A-TAPE or DURABOND Joint System.

e. No. 400 USG Metal Trim.

f. USG Corner Bead—DUR-A-BEAD*, PERF-A-BEAD*.

erection of Styrofoam FR

Mortar joints on surface of unit masonry to which Styrofoam FR is to be bonded shall be cut flush with masonry to provide an even surface. The wall surface shall be plumb, true to dimensions, and clean. Old or dirty masonry must be hosed; swept and wiped down to remove loose material. Form mark protrusions must be removed from poured or precast concrete; form release agents must be removed. *Specify as required by particular job conditions.*

Prior to installation, attach nailer strips by mechanical means to the wall surface at base and wall-ceiling junctions where shown and wherever required for subsequent attachment of moldings trim, casings, base, cabinets, heavy drapes or other heavy wall fixtures.

Styrofoam FR shall be adhered to unit masonry using portland cement mortar or Styrotac Bonding Adhesive.

Styrofoam FR shall be adhered to architecturally poured concrete, or pre-cast concrete using Styrotac bonding adhesive modified with Styrocrete or portland cement mortar modified with Styrocrete.

Portland cement mortar, or mortar modified with Styrocrete latex additive shall be applied to Styrofoam FR by means of a push-box.

Styrotac or Styrotac modified with Styrocrete shall be applied to the entire surface of the board of Styrofoam FR using spots of Styrotac 2″ to 3″ across, ½″ to 1″ peak height and spaced approximately 8″ o.c., or a notched spreader or notched doctor blade and push-box approved for the application of this adhesive.

When preparations are complete, bond the desired thickness of Styrofoam FR directly to the masonry wall. Install foam horizontally to wall surface, butt all edges tightly and stagger all vertical joints. Apply firm hand pressure over board surface to effect bond, and level board as required. Place Styrofoam FR on wall *within 20 minutes* after adhesive application. When the adhesive has been modified with Styrocrete latex mortar adhesive, place Styrofoam FR on wall *within 10 minutes.*

erection of gypsum wallboard

A minimum of 24 hours after Styrofoam FR has been installed, bond SHEETROCK wallboard directly on the foam with Styrotac bonding adhesive. Wallboard shall be cut to floor-to-ceiling height, less at least ⅛″ for floor clearance.

Styrotac shall be stripped lightly along the edges and applied to the entire back surface of the SHEETROCK using an approved notched spreader or spot applications 2″ to 3″ across, ½″ peak height spaced approximately 8″ to 12″ o.c.

Within 20 minutes after adhesive is applied, place SHEETROCK gypsum wallboard with long (tapered) edges vertically against the Styrofoam FR with bottom wallboard end off the floor and apply firm hand pressure over board surface to effect bond and level board. Board shall be attached to all nailers with GWB-54 nails 8″ o.c. or 1¼″ USG Drywall Screws Type W 16″ o.c.

After Styrotac is well set (minimum of 24 hours), forming a firm bond between the SHEETROCK wallboard and the Styrofoam FR, finish SHEETROCK in conventional manner, taking care not to severely shock the surface by impact for at least 72 hours. Wallboard joints shall be taped and treated their full length including areas above suspended ceilings and under base.

See USG Drywall Wall Furring System Folder for wallboard accessory specifications.

UNITED STATES GYPSUM

exterior walls

e

Exterior Stucco and Stucco Mesh

1796

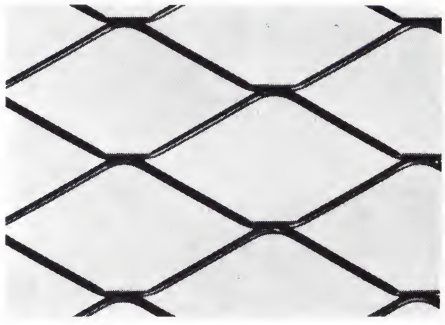
description

This system consists of ORIENTAL* Exterior Stucco Finish applied over a portland cement-lime basecoat and reinforced with expanded metal lath. It is suitable for use in both commercial and residential applications, in new construction or remodeling, to provide a hard, strong fire-resistant exterior wall finish that does not deteriorate after repeated wetting and drying. It may be used in both warm and cold climates over concrete or other masonry, over sheathing in wood or steel frame construction, or in prefabricated curtain wall panels.

ORIENTAL Exterior Finish, a factory-prepared stucco, requiring the addition of water only on the job, is suitable for machine or hand application. It is available in white and 11 colors, machine mixed in the factory using mineral pigments and selected aggregate.

Reinforcing for this assembly is available in two types. USG* Expanded Metal Stucco Mesh, weighing 1.8 and 3.6 lbs. per sq. yd., is slit and expanded into diamond-shaped openings approximately 1½″x3″ in size. It is available in sheets 48″x99″, painted with a rust-inhibitive coating and applied with a stucco furring nail. The alternate material, USG Self-Furring Diamond Mesh Lath, has small diamond-shaped openings and ¼″ indentations 1½″ o.c. to hold the body of the lath away from the sheathing. It weighs 3.4 lbs. per sq. yd. and is available in sheets 27″x96″, painted. Diamond Mesh Lath is also manufactured from galvanized sheets.

USG expanded metal stucco mesh



function and utility

Fire-resistant—The system components are incombustible.

Weather-resistant—Withstands intense heat, freezing and thawing, rain and long periods of extreme cold.

Durable—Strong, hard surface provides an attractive exterior finish with negligible maintenance.

Versatile—Adaptable to all types of new construction and modernization. Suitable for concrete, steel, or wood framing systems for application on the job or in prefabricated curtain wall panels.

Decorative—The system offers opportunity for unique design expression. The combinations of textures, colors, exposed colored aggregates and three-dimensional shapes and patterns are unlimited.

Economical—Low cost materials, fast machine application, and long life with low maintenance costs combine to make this an economical exterior finish.

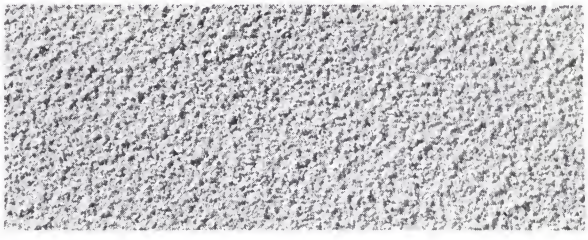
limitations

1. Not recommended for application in freezing weather or immediately before or during a rainstorm.

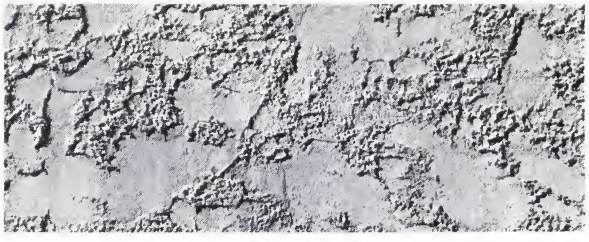
2. Apply only over a portland cement-lime basecoat.

3. Not designed for use as a smooth trowel finish.

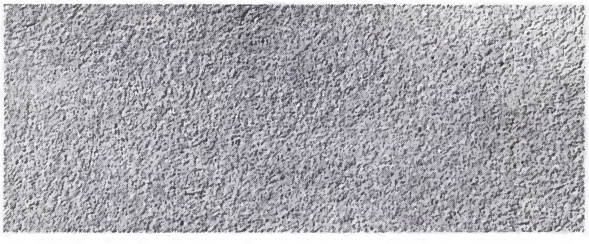
stucco finishes



machine spray-applied texture



dashed and troweled texture



hand-float texture

A.I.A. File No. 21-D

*Reg. U.S. Pat. Off.

specifications

notes to architect

1. *Portland cement stucco and plaster should never be applied to surfaces containing frost or when there is danger of the temperature dropping below freezing. The temperature of the material must be maintained above 50° F for not less than 48 hours after application.*

2. *Exterior stucco requires moist-curing to properly hydrate and harden. Proper hydration requires sufficient water, favorable temperature and time. The surface of newly stuccoed walls should be protected from hot dry winds or excessive ventilation, and should be kept moist with a fog spray of water until proper hydration takes place.*

3. *Exterior stucco surfaces will not resist shrinkage stresses or stresses imposed by structural movement, and are subject to dimensional variations due to changes in temperature and humidity. It is recommended that stucco surfaces be divided into panels with control joints.*

The spacing between control joints should not exceed 10 ft. in either direction and the area between separate sections should not exceed 100 sq. ft. Control joints should also be specified where:

- **a.** *A stucco wall abuts a dissimilar wall or ceiling assembly.*
- **b.** *The wall construction changes within the plane of the wall.*
- **c.** *The basic wall construction contains a control joint.*

Lath should be broken behind control joints. Where there is an intersection of vertical and horizontal joints, the vertical joint should be continuous and the horizontal joint should abut to it. Splices and intersections exposed to the elements should be caulked with a silicone rubber caulking cement.

4. *Holes cut in a stucco membrane for door frames, windows, etc. cause a concentration of stresses in the wall. The use of additional reinforcement is recommended at the weakened area to resist and distribute concentrated stresses where, in the judgment of the architect, for reasons of economy of design, a control joint is not otherwise specified.*

5. *Metal corner beads are not recommended for use on exterior corners exposed to the weather. The plasterer should form the arris by stripping.*

6. *High-grade, rust-resisting flashings should be properly placed and installed to prevent water from getting behind stucco or plaster. Expanded metal reinforcing should extend over the flashing.*

7. *Metal reinforcement should be used for a stucco base on all wood or steel frame structures of open or sheathed type, over old masonry walls, over flashing and all surfaces that do not provide a satisfactory bond for the stucco. All surfaces to receive metal reinforcement except areas to be back plastered should be covered with a 15 lb. felt or waterproof building paper.*

The most expedient way to obtain information on details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Architect Service Department, 101 S. Wacker Dr., Chicago, Ill. 60606.

materials

See USG product folders in this series:

Gypsum Plasters Folder for Plaster Specifications.

Plaster Bases & Accessories Folder for General Lathing Specifications.

Paint Products Folder for Paint Specifications.

All materials herein specified shall be manufactured by the United States Gypsum Company, unless otherwise indicated.

- **a.** Metal reinforcement shall be: USG (1.8) (3.6) lb. Stucco Mesh, 48″ x 99″, ptd., or USG 3.4 lb. Galvanized Self-Furring Junior Diamond Mesh Lath 27″x96″.
- **b.** USG Selv-edge Cornerite (2″x2″) (3″x3″).
- **c.** USG Striplath.
- **d.** 18 Ga. Galvanized Tie Wire.
- **e.** Stucco Furring Nails (not available from U.S.G.).

stucco base erection

Expanded metal reinforcement shall be applied with the long dimension of the sheet across the supports. The ends of diamond mesh lath shall be lapped not less than 1″. If end laps are made between supports, they shall be adequately laced or tied with 18 ga. tie wire. The sides of diamond mesh lath shall be lapped not less than ½″. Stucco mesh shall be lapped one diamond at sides and ends. Wherever possible, ends of lath in adjacent courses shall be staggered. At all interior angles, metal lath shall be formed into the corners and carried out at least 6″ onto the abutting surface, and adequately secured, or cornerite shall be applied.

Metal reinforcement shall be securely attached to all supports at intervals not exceeding 6″ in the direction of supports and 16″ in the opposite direction. Reinforcement shall be securely attached to steel framing with 18 ga. galvanized tie wire; to wood framing with galvanized nails having a penetration into vertical supports of at least 1″ and into horizontal supports of at least 1⅜″; to concrete with concrete stub nails or power driven anchors. The attachment of stucco mesh shall provide at least ¼″ furred space between the mesh and the backing.

UNITED STATES GYPSUM

exterior walls

e

1816

ARMORWEAVE* Fascia Walls

EXPANDED METAL

A.I.A. File No. 15-T

description

Countless new opportunities for creative design are available with ARMORWEAVE Expanded Metal building fascia. Whether used in new construction, in remodeling to hide an old building, or for sunshading, ARMORWEAVE provides attractive, functional and economical exterior fascia.

In this system lightweight, rigid ARMORWEAVE sheets are fastened to a job-fabricated or commercially available grid attached to the exterior wall or supporting structure.

ARMORWEAVE, a sturdy, massive mesh pattern, is available in 1½″ and 4″ styles to adapt to varying proportion requirements. Its wide-offset strands and bonds come in two widths; (L)—Light Strands and (H)—Heavy Strands, and give ARMORWEAVE its excellent shading and concealing power; its pleasing depth and texture, its high strength and rigidity. Yet this mesh retains a high percentage of open area for passage of air and usable light.

ARMORWEAVE, made from carbon steel or aluminum, is available from nationwide distributors' stocks in a variety of sheet sizes (see Technical Data, page 2).

function and utility

When used as sunshading, ARMORWEAVE Fascia Panels effectively block the sun's glare and heat—reduce air conditioning costs. As screening ARMORWEAVE panels are ideal for giving old buildings a fresh new look or concealing unsightly equipment to preserve a building's beauty. They also are effectively used as a combination decorative front and sign background.

Design Freedom—Unlimited opportunities for individual design creativity through the many beautiful colored finishes, patterns and textures available.

Versatile—The large variety of styles, sizes, alloys available readily adapt to job requirements.

Practical—High strength and rigidity plus large open area serve to minimize wind resistance, make ARMORWEAVE suitable for nationwide use. Lightweight, easily fabricated, requires only light structural support.

Economical—Initial cost is less than other types of decorative fascia. ARMORWEAVE Fascia Panels have no moving parts; are quickly fabricated, readily installed, and easily maintained.

sunshading

ARMORWEAVE is an efficient and practical "sunshading" material. This versatile expanded metal shuts out unwanted glare and heat by shading the openings in wall areas, yet permits passage of needed light, as well as air. Screening out heat increases comfort indoors, substantially lowers air-conditioning costs. While cutting down on the heat of the summer sun, it does not minimize the warmth of the winter sun.

ARMORWEAVE used as a vertical sunshade gives nearly 180° of horizontal out-look and still affords desirable privacy from the vision of passersby. ARMORWEAVE is all in one piece, and has no moving parts to be relied on for effectiveness.

The several styles of ARMORWEAVE available provide a choice of materials to meet various sunshading requirements. 1½″ and 4″ (L) ARMORWEAVE placed vertically give 100% shading at a 45° profile angle. For more critical sunshading requirements, 1½″ and 4″ (H) ARMORWEAVE, a heavier strand material created especially for use as a sunshade, gives 100% shading at a 36° profile angle.

For screening—ARMORWEAVE panels provide functional fascias with colorful, textured design.
For sunshading—ARMORWEAVE panels cut out direct sunlight—reduce air conditioning cost.

The table below shows shading percentages of ARMORWEAVE placed vertically for various profile angles of the sun. The slope of the bond in the ARMORWEAVE is down and toward the sun to provide maximum shading and these results.

percent shading—ARMORWEAVE	profile angle—degrees 0	10	20	30	36	40	45
1½″ and 4″ (L) Styles	63	71	79	87	—	96	100
1½″ and 4″ (H) Styles	73	81	88	95	100	100	100

Profile Angle: The angle through which a horizontal plane must be rotated about a horizontal axis located in the plane of the ARMORWEAVE Expanded Metal in order to include the position of the sun. The profile angle, sometimes called the shadow angle, is used on sectional drawings to calculate the positions and dimensions of shading devices.
(L)—light strands (H)—heavy strands

screening

ARMORWEAVE Expanded Metal has effective hiding properties that are required in remodeling or in covering equipment on the top of a building. The wide strand is placed to most effectively block the view from the ground (see details) and is opposite to the placement for shading. Because ARMORWEAVE is an openwork of metal, complete hiding from all viewing angles cannot be achieved. But hiding properties can be greatly improved by shutting out objectionable overhead light and by painting the background structure a dark color.

framing

Unique ARMORWEAVE Expanded Metal adapts readily to framing sections and fastenings that are common in architectural use. Some typical examples, shown on page 3, are angles, bars, tees, channels and I-beams. Aluminum extrusions, such as rectangular and square tubing and various types of metal store-front trim, are also used.

finishing

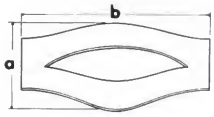
A variety of finishes may be applied to ARMORWEAVE Expanded Metal to provide appropriate color and added cor-

(*continued on page 2*)

A.I.A. File No. 15-T

*Reg. U.S. Pat. Off.

technical data



maximum recommended span—(unsupported clear span—L.W.D.)

Style of ARMORWEAVE Expanded Metal

design wind pressure psf	carbon steel				aluminum alloy 3003-H14									
	1½"—18(L)		1½"—18(H)		1½"—.051(L)		1½"—.051(H)		1½"—.081(L)		1½"—.081(H)		4"—.081(L)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
20	3'2"	8'0"	8'0"	8'0"	3'6"	5'6"	4'7"	6'0"	7'0"	8'0"	8'0"	8'0"	1'0"	1'8"
25	2 8	6 4	8 0	8 0	2 10	4 4	4 0	5 4	5 6	8 0	8 0	8 0	—	1 4
30	2 5	5 5	8 0	8 0	2 4	3 8	3 2	4 4	5 0	7 6	8 0	8 0	—	1 2
35	2 0	4 8	7 0	8 0	2 1	3 4	2 8	3 7	4 0	6 6	7 0	8 0	—	1 0
40	1 10	4 1	6 0	7 0	1 11	2 11	2 6	3 4	3 7	6 0	6 0	8 0	—	—
45	1 7	3 8	5 0	7 0	1 8	2 6	2 4	3 0	3 2	5 0	5 0	8 0	—	—
50	1 6	3 5	5 0	6 0	1 6	2 5	2 0	2 10	3 0	4 7	5 0	8 0	—	—
55	1 5	3 2	4 6	5 6	1 5	2 1	1 10	2 6	2 8	4 4	4 6	7 6	—	—
60	1 2	2 11	4 0	5 0	1 4	2 0	1 7	2 4	2 6	4 0	4 0	7 0	—	—

(1) At Yield Point (2) At Permanent Set of 1/360 of Span

ARMORWEAVE characteristics—size and weight

material	reg. flat.	style designation	design size a x b (inches)	opening size (inches)	strand size c x d (inches)	overall thick-ness e (inches)	standard sheet size		per cent open area	wt.-lbs. per 100 sq. ft.
							width (SWO)	length (LWO)		
carbon steel	R	1½" #20 (L)	1.33x3.00	.71 x2.26	.036x.500	.500	4'	8'	25	113
		1½ #20 (H)	1.50x3.00	.65 x2.28	.036x.675	.600	4	8	10	135
		1½ #18 (L)	1.37x3.00	.70 x2.26	.048x.500	.540	See Footnote 1		27	146
		1½ #18 (H)	1.50x3.00	.54 x2.10	.048x.675	.550	See Footnote 1		10	180
		1½ #16 (L)	1.37x3.00	.70 x2.30	.060x.500	.570	4	8	27	183
		1½ #16 (H)	1.50x3.00	.48 x2.03	.060x.675	.550	4	8	10	226
		4 #16 (L)	3.44x8.00	1.625x6.25	.059x1.25	1.187	4	8 & 10	30	182
		*4 #16 (H)	2.75x8.00	.55 x5.00	.059x1.25	1.00	4	8 & 10	20	224
aluminum	R	1½ .051 (L)	1.24x3.00	.52 x2.10	.051x.500	.500	See Footnote 2		21	59
		1½ .051 (H)	1.47x3.00	.40 x2.00	.051x.675	.470	See Footnote 2		10	67
		1½ .081 (L)	1.26x3.00	.52 x2.10	.081x.500	.530	See Footnote 1		23	91
		1½ .081 (H)	1.46x3.00	.43 x2.00	.081x.675	.520	See Footnote 1		10	106
		4 .051 (L)	3.0 x8.00	.76 x6.25	.051x1.25	1.020	4	8	10	61
		*4 .051 (H)	2.82x8.00	.51 x5.65	.051x1.25	.900	4	8	25	65
		4 .081 (L)	3.0 x8.00	1.25 x6.00	.081x1.25	1.187	4	8 & 10	20	96
		4 .081 (H)	2.75x8.00	.50 x5.30	.081x1.25	1.00	4	8 & 10*	18	103

*Produced on special order. (H)=Heavy Strand (L)=Light Strand Footnote 1: Sheet Sizes are 4' x 8', 6' x 8', and 6' x 6'3" 2: Sheet Sizes are 4' x 8', 6' x 8', 6' x 6'3", and 8' x 4'
All dimensions and weights are approximate. "a"=SWO (Short Way of the Opening); "b"=LWO (Long Way of the Opening).

finishing (*continued from page 1*)

rosion resistance. The meshes readily adapt to standard methods of applying painted, anodic, porcelain enamel, plastic coated and baked enamel finishes. It is recommended that aluminum meshes which are to be erected without finishing be thoroughly cleaned before erection to eliminate dirt, soot, and oils that accumulate. Tables of common finishes suitable for this application are shown at right.

aid to architects and designers

To promote a better understanding of expanded metals and assure a satisfactory result, design and sales service to aid architects is offered by U.S.G. Sales Engineers. They are equipped to assist in working out specific problems concerning design, fabrication, finishing and attachment of expanded metals. Further information is available in USG brochure IS-85, "Design Data for ARMORWEAVE Building Fascia Panels."

limitations

1. See table above for maximum spans. Panels must be rigidly attached to framing with suitable fastening about 6" o.c.

2. Certain precautions regarding cleaning, use of aluminum meshes and bending must be taken when using ARMORWEAVE Expanded Metal for fascia walls. See Specifications, page 4 for details.

finishes—Aluminum ARMORWEAVE

alloy	type	remarks
3003-H14	Unfinished	Specify thorough surface cleaning prior to painting.
3003-H14	Painted	Resists mild abrasion. Colors generally available: natural, red, blue, green, yellow, gold, silver, copper, brass and black.
3003-H14	Exterior Anodized	Higher abrasion resistance.
3003-H14	Heavy Duty Anodized	Highest resistance to abrasion and to attack by combinations of sea air, humidity and industrially contaminated atmospheres.
6061-0	Porcelain Enameled	Better structural properties after firing. This alloy expanded on special order only.

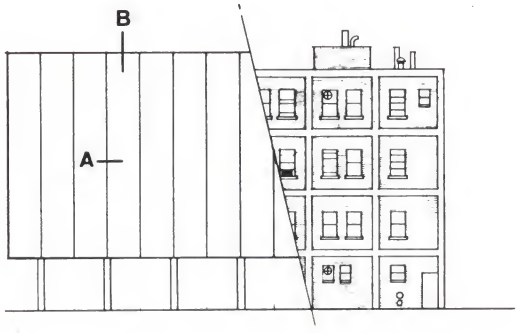
finishes—Carbon Steel ARMORWEAVE

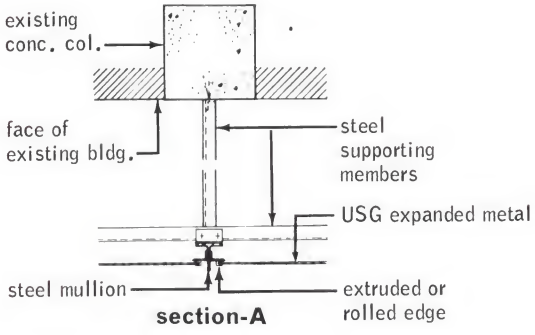
type	remarks
Painted	Steel used has scale-free surface, but is shipped lightly oiled. Specify cleaning prior to finishing.
Bonderized & Enameled Plastic Coated Porcelain Enameled	Produced from low-carbon open-hearth steel adaptable to this finish.

NOTES: Finishes are listed in descending order of generally added initial cost. United States Gypsum does not apply above finishes.

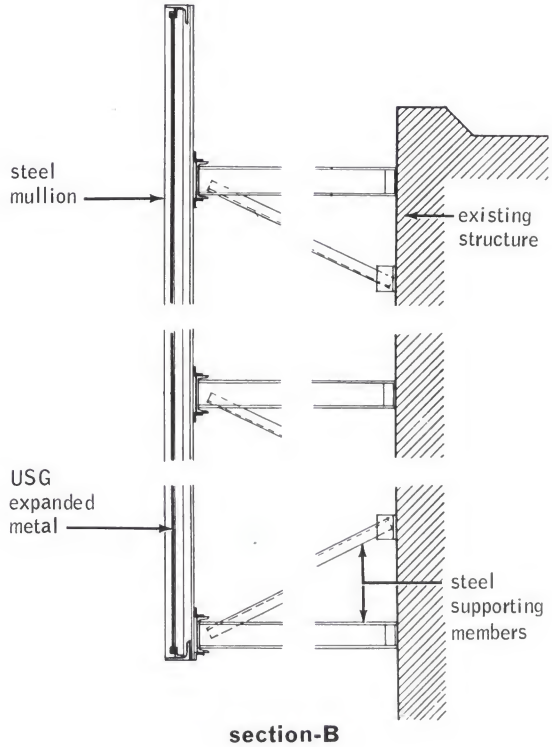
details

over existing structures



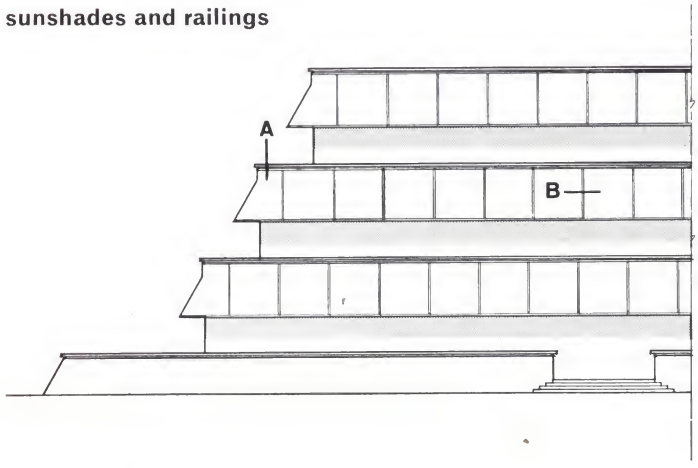


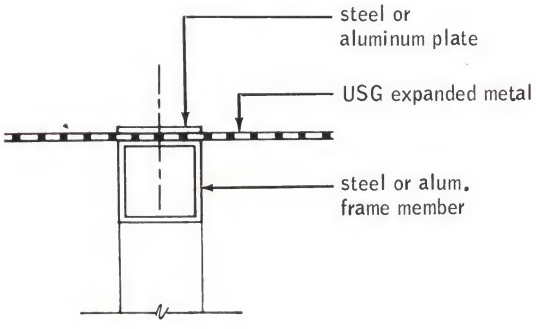
section-A



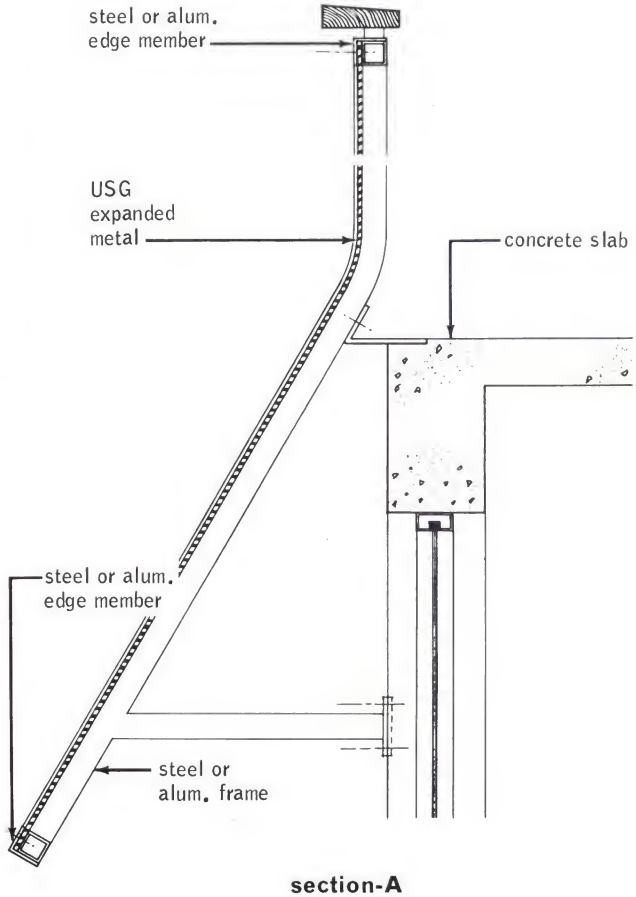
section-B

sunshades and railings





section-B



section-A

*Reg. U.S. Pat. Off.

specifications

notes to architect

1. *The table on page 2 shows maximum recommended span for various styles of carbon steel and aluminum ARMORWEAVE. This is an unreinforced clear span L.W.D. (or span parallel to the "long way of the design," or long way of the opening). When erecting ARMORWEAVE, the material should be supported along the full width of the panel. If the panel is placed vertically with the L.W.D. axis in a horizontal position, the panel should be fully supported along the vertical edges. It is desirable from an appearance standpoint to reveal support at the top and bottom of the panel, but additional horizontal supports are not necessary to achieve the results shown in the table, and for proper support. Cantilevering or extension of the ARMORWEAVE beyond the supports is not recommended.*

2. *ARMORWEAVE should be attached to the supporting framework about 6" o.c. by bolting, riveting, or welding.*

3. *For the best appearance and uniformity on the job, care should be taken in the placement of the ARMORWEAVE panels to make sure they are all installed in a like manner. ARMORWEAVE has a different light reflectance on opposite sides of the sheet due to the inherent product characteristics. The side with the tool impression extending between the openings is more contoured than the reverse side of the sheet. For the best sunshading properties, the ARMORWEAVE strand width should be placed to most effectively block the sun's rays. For the best hiding properties the ARMORWEAVE strand width should be placed to most effectively block the view from the ground.*

4. *At times it is desirable to use panels of ARMORWEAVE that are larger than the maximum sheet size available, as long vertical runs may be desired for accentuation. Because of the sunshading and hiding characteristics of ARMORWEAVE, this means individual sheets must be joined in width (or span parallel to the "short way of the design") to form the panel. A method has been developed for joining by lapping individual sheets over one full design and fastening in pieces together with rivets or sheet metal screws. If desired, sheets can be matched, drilled and tagged at the plant and shipped to the customer for on-the-job assembly into panels. Due to the inherent characteristics of ARMORWEAVE, it is not economically feasible to join two sheets in the long direction of the diamond; a guaranteed match is impractical. It is best to allow for tolerances in the design by providing a cover plate or section over the outside edges of the ARMORWEAVE panel. To insure proper seating of ARMORWEAVE in the framework for fastening purposes, it is recommended that framing of the sheet extend over at least two bonds on the sides and at least one bond on the ends. Without this support, the ARMORWEAVE may buckle or bow as the fastenings are tightened.*

5. *Aluminum meshes which are to be erected without finishing should be thoroughly cleaned before erection to eliminate dirt, soot and oils that accumulate.*

6. *If an aluminum mesh is attached to a steel frame, a gasket of rubber or other non-conductor should be used to provide insulation and prevent galvanic corrosion.*

7. *Bending ARMORWEAVE on a very short radius may cause fracturing and is not recommended.*

8. *A hot-dipped galvanizing finish is not recommended for application to ARMORWEAVE.*

The most expedient way to obtain additional information or details not covered in this publication is to direct inquiries to: UNITED STATES GYPSUM, Industrial Steel Department, 101 S. Wacker Dr., Chicago, Ill. 60606.

scope

The contractor shall supply all labor, material and equipment to install the ARMORWEAVE Expanded Metal in all areas where shown on the drawings.

materials

ARMORWEAVE Expanded Metal shall be (specify by complete style designation. *Example:* 1½"-18 (H) Carbon Steel ARMORWEAVE Expanded Metal). (The architect should specify the finish required on the Expanded Metal, i.e., cleaned and painted, anodized, etc., with appropriate specification for such finishing.)

installation

The ARMORWEAVE shall be attached to the supporting framework with (specify type of material, size and finish of fasteners) no greater than (specify distance) on centers.